

STATE OF WISCONSIN : CIRCUIT COURT : MANITOWOC COUNTY
BRANCH 1

STATE OF WISCONSIN,

PLAINTIFF,

JURY TRIAL

TRIAL - DAY 20

vs.

Case No. 05 CF 381

STEVEN A. AVERY,

DEFENDANT.

DATE: MARCH 9, 2007

BEFORE: Hon. Patrick L. Willis
Circuit Court Judge

APPEARANCES: KENNETH R. KRATZ
Special Prosecutor
On behalf of the State of Wisconsin.

THOMAS J. FALLON
Special Prosecutor
On behalf of the State of Wisconsin.

NORMAN A. GAHN
Special Prosecutor
On behalf of the State of Wisconsin.

DEAN A. STRANG
Attorney at Law
On behalf of the Defendant.

JEROME F. BUTING
Attorney at Law
On behalf of the Defendant.

STEVEN A. AVERY
Defendant
Appeared in person.

PARTIAL TRANSCRIPT OF PROCEEDINGS

Reported by Diane Tesheneck, RPR

Official Court Reporter

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1 THE COURT: At this time the Court calls
2 State of Wisconsin vs. Steven Avery, Case No. 05 CF
3 381. We're here this morning for a continuation of
4 the trial in this matter. Will the parties, again,
5 state their appearances for the record.

6 ATTORNEY FALLON: Good morning, your Honor,
7 may it please the Court, the State appears by
8 Assistant Attorney General Tom Fallon, District
9 Attorney Ken Kratz, and in a very short moment,
10 Assistant District Attorney Norm Gahn on behalf of
11 the State.

12 ATTORNEY STRANG: Good morning, your Honor,
13 Attorneys Jerome Buting and Dean Strang appearing
14 with Mr. Avery.

15 THE COURT: Very well. The defense may
16 call its next witness at this time.

17 ATTORNEY BUTING: Okay. The defense calls
18 Janine Arvizu.

19 THE CLERK: Please raise your right hand.

20 **JANINE ARVIZU**, called as a witness
21 herein, having been first duly sworn, was
22 examined and testified as follows:

23 THE CLERK: Please be seated. Please
24 state --

25 ATTORNEY FALLON: Could we have just one

1 moment for Mr. Gahn, this will be his witness. He
2 apparently is momentarily delayed.

3 ATTORNEY KRATZ: It will just be a moment,
4 Judge, he's carrying some things in.

5 THE COURT: All right. I will allow the
6 Clerk to swear the witness, and then we'll wait for
7 the examination until Mr. Gahn gets here.

8 ATTORNEY FALLON: Thank you.

9 THE CLERK: Please state your name, spell
10 your last name for the record.

11 THE WITNESS: My name is Janine Arvizu,
12 A-r-v-i-z-u.

13 ATTORNEY BUTING: This microphone has been
14 a little bit touchy the whole time, so we'll try it
15 right about there.

16 THE WITNESS: Okay. Thank you.

17 ATTORNEY GAHN: I'm so sorry, your Honor.
18 I was held up on something. I apologize to the
19 Court.

20 THE COURT: All right. Mr. Buting, you may
21 begin.

22 ATTORNEY BUTING: Thank you, your Honor.

23 **DIRECT EXAMINATION**

24 BY ATTORNEY BUTING:

25 Q. Ms Arvizu, would you tell us your occupation,

1 please.

2 A. Yes, I'm a Laboratory Quality Auditor.

3 Q. Okay. And how are you employed?

4 A. I do independent contracting for people who use
5 analytical data and want to understand how much
6 reliable -- how reliable and how valid the data
7 are.

8 Q. Okay. And before I get into that a little bit
9 more, would you tell me, first, what your
10 educational background is?

11 A. Yes, sir. I have a Bachelor of Science in
12 Bio-Chemistry from Cal Poly in San Luis Obispo
13 and a ABD in Chemistry from the University of New
14 Mexico. And I'm certified as a quality auditor
15 by the American Society for Quality.

16 Q. Okay. And what is an ABD?

17 A. ABD is all but dissertation, it's, essentially,
18 that you have completed all the course work and
19 examinations for a Ph.D. but did not complete the
20 dissertation.

21 Q. Okay. Maybe just explain to us why you got to
22 that point and didn't complete your Ph.D.?

23 A. I accepted employment with one of the DOE,
24 Department of Energy, National Laboratories, to
25 continue the work I was doing my dissertation on,

1 that was funded by the Department of Energy.
2 After I accepted employment and started working,
3 we lost funding for that project, so I elected to
4 keep the job rather than go back to school.

5 Q. Okay. And do you have exhibit -- I'm sorry, what
6 is the exhibit number in front of you?

7 A. 499.

8 Q. 499. Can you just identify that for the record?

9 A. It's a copy of my resumé.

10 Q. Okay. And does that summarize your educational
11 background, as well as your areas of expertise
12 and your professional experience?

13 A. Yes.

14 Q. All right. We'll talk a little bit about your
15 professional experience in a minute, but, first,
16 the chemistry that you are involved with, is that
17 analytical chemistry?

18 A. Yes.

19 Q. And what is a lab auditor and who uses them?

20 A. A lab auditor is pretty much similar to what you
21 would expect for an auditor of any other
22 discipline. Lab auditors go into laboratories
23 and, essentially, look at how reliable and how
24 valid the data are that are reported by a
25 laboratory.

1 The people who use lab results, it's not
2 like buying a pound of sugar or buying a pound of
3 flour, different laboratories produce different
4 quality data. And so if the data that are being
5 used by a data user are real important and they
6 make real important decisions based on those
7 results, then they can hire an auditor to come in
8 and look at the lab's operations and see whether
9 or not the lab was operating in accordance with
10 good scientific principles and had good quality
11 control practices at the time the laboratory work
12 was done.

13 And so, over the course of my career,
14 the majority of my work assessing data quality
15 and looking at labs has been done for the federal
16 government, because they are probably the biggest
17 consumer of laboratory results. They use a lot
18 of analytical results. And so it's real -- And
19 they make very important decisions based on those
20 results, so it's real important to them to
21 understand how reliable and how valid their data
22 are.

23 Q. Does your employment -- or has your professional
24 experience involved review of commercial, private
25 laboratories exclusively, or government

1 exclusively, or combination, or what?

2 A. Mm-hmm. I have conducted audits of both
3 commercial and government laboratories. Because,
4 again, the government both operates its own
5 laboratories and contracts with commercial
6 services.

7 So I have audited state laboratories,
8 federal laboratories, commercial laboratories, in
9 a wide variety of disciplines. These are labs
10 that test environmental samples, food samples,
11 pharmaceutical samples, the whole manufacturing,
12 a whole gamut of samples.

13 Q. So what -- what arm of the federal government
14 would employ you to do an audit of another
15 government lab? I mean, you know, one part
16 auditing another part, right hand, left hand?

17 A. I'm not sure that's exactly the way it happens.
18 For example, I would be contracted by the U.S.
19 Navy to audit the laboratories that did
20 analytical work for the Navy. So that would
21 include both Navy laboratories, actually staffed
22 by Navy personnel, as well as commercial
23 laboratories.

24 So, it was -- And the Navy, if you will,
25 was the user of the results, and so they wanted

1 to know how much confidence they could have, but
2 it included -- I guess they were in a different
3 part of the Navy, if that's what you mean.

4 Q. Okay. And why is it important that a government
5 lab or a private lab be audited?

6 A. Experience has shown, in the business of science,
7 you know, it's really, really hard to do science
8 on a production line. I managed an analytical
9 lab for the Department of Energy for a number of
10 years, and it's a really, really hard job to do.

11 And that's what we're really asking of
12 these laboratories who are testing unknown
13 samples, is to practice science day, after day,
14 after day, in a highly defensible and valid
15 manner. It's a really hard job.

16 And the -- Experience has shown in the
17 measurement in science business, that the best
18 way to insure the reliability and the validity of
19 the results is to have a very rigorous, quality
20 assurance program in place.

21 It's not a management gizmo of the week;
22 it's a very technically driven job to put in
23 place quality control practices and measures, to
24 ensure that you consistently and reliably produce
25 good quality data.

1 And so that's what drives it, ensuring
2 that you understand the quality of your data and
3 that your data is good enough so you can make
4 good confident decisions based on them.

5 Q. And does the -- does the government, federal
6 government in the instance -- in the situation
7 that you had some experience in, do they ask for
8 audits of -- let's say, let's go to private labs
9 first a minute, just to check up and see if they
10 are okay, or are they sometimes concerned about
11 more serious things in the use of tax dollars?

12 A. It's a little bit of both. And the nature of the
13 problems can be either that the lab doesn't know
14 they have a problem, so when you go in as an
15 auditor you're identifying a problem that they
16 were largely unaware of.

17 For example, I did some work for the
18 Navy where they were interested in the presence
19 of a particular contaminant in bay water. And
20 the laboratory reported that it was not detected.
21 Lots and lots of samples, it was a very expensive
22 analysis. It was hundreds of thousands of
23 dollars worth of analysis in question, and the
24 laboratory reported it was not detected.

25 But when I went in and audited the

1 laboratory, I saw that the laboratories detection
2 limit was way up here, and the detection that the
3 Navy was interested in, where they knew they had
4 to pay attention to, was way down here.

5 So the fact that the lab said it wasn't
6 detected at this very concentrated level, really
7 didn't answer the Navy's question, and so they
8 ended up not having to pay for all that analysis,
9 because it really -- although, it's true that the
10 lab didn't detect it, it was really inappropriate
11 for the Navy's use, and so they ended up not
12 having to pay for it.

13 Q. So you saved the Navy some money --

14 A. Mm-hmm.

15 Q. -- by showing that the laboratory just didn't
16 provide what was asked for?

17 A. Correct.

18 Q. Okay. And has some of your investigation also
19 involved, or uncovered, any kind of fraudulent
20 practices by laboratories, government or
21 otherwise?

22 A. Yes. One of the things that you do as an auditor
23 is, is you try to reconstruct things after the
24 fact. All I'm dealing with, after the fact, is a
25 pile of paper. And so I'm trying to reconstruct

1 everything that happened with that sample, from
2 the time it was collected in the field, all the
3 way till it was ultimately reported on a piece of
4 paper in a lab report. And try to understand
5 whether all the controls were in place, and the
6 integrity of the sample was maintained, and the
7 results are valid and reliable.

8 So that's the whole process. And I have
9 kind of forgotten the beginning of that question,
10 I apologize.

11 Q. Whether or not you have had any experience in
12 detecting, or anything fraudulent.

13 A. During the course of that process, for example,
14 at a commercial laboratory, I determine that
15 although it appeared that they had results and
16 they had data, the paper data that looked like
17 results, when you put it altogether, I realized
18 that they were actually reporting more data than
19 they had the capacity to generate with their
20 instrument. It was like they only had the
21 ability with their instrument, for how long the
22 method took, to run one sample in one day, and
23 they were reporting results from many samples in
24 one day.

25 That meant that they were -- in our

1 local term it's "dry labbing", they were making
2 up results. They weren't testing the samples;
3 they were just making up the results. Obviously,
4 a clearly fraudulent practice that the government
5 doesn't want to pay for.

6 So that's the kind of big picture
7 perspective that you look at when you try to
8 audit laboratories.

9 Q. And as a result of some of your work or
10 investigations, has there been any criminal
11 penalty -- criminal or civil penalties imposed on
12 labs when they do that sort of thing?

13 A. You know, I just -- I just report it to the
14 government. I don't know what they do as a
15 follow-up.

16 Q. Okay. By the way, I don't know if it was made
17 clear, but what is your -- where -- who do you
18 work for now?

19 A. In this case?

20 Q. No, I'm sorry. What's your employment, your
21 business?

22 A. I'm an independent contractor in my -- in my
23 assessment duties as a forensic.

24 Q. Okay. Where is it based?

25 A. In the Albuquerque, New Mexico area.

1 Q. Okay. Do you work -- do you have any limits on
2 where you work, or are you all over the place, or
3 what?

4 A. I'm all over the place. I get data from all over
5 the country, even from overseas. I have
6 testified overseas as well.

7 Q. And you have been doing this for approximately
8 how long?

9 A. Well, I have been auditing labs and doing data
10 quality assessments for many, many years. But do
11 you mean, specifically, in the forensic
12 discipline?

13 Q. Sure.

14 A. In the forensic discipline, since the late '90's.

15 Q. Okay. And in terms of auditing labs, in general,
16 how long has your career been in that?

17 A. Since the '80s.

18 Q. And have you published any articles or anything?

19 A. The business of data quality assessment, I'm
20 working for the people using the results, and
21 they generally have proprietary use to the
22 results that I report to them. However, when I
23 was working for the Navy, I actually authored
24 their quality standard that they used for the
25 evaluation of laboratories. And it, essentially,

1 was the rules of the road for government
2 commercial labs that they wanted to work for the
3 Navy.

4 Q. All right. Are you familiar with -- We have had
5 some testimony about different types of
6 instruments that analytical chemists use. Are
7 you familiar with liquid chromatography?

8 A. Yes.

9 Q. And mass spectrometry -- spectrometry?

10 A. Yes.

11 Q. And the instruments that are used for those kinds
12 of tests?

13 A. Yes.

14 Q. Have you operated those kinds of instruments?

15 A. I have operated both.

16 Q. Okay. Can you tell us what a protocol is?

17 A. Mm-hmm. A protocol simply describes how a
18 laboratory does a -- performs a particular
19 method. It sets down the recipe, if you will,
20 for how they treat samples and what controls they
21 introduce, what it takes to have acceptable
22 performance or not.

23 Q. And as part of your auditing process, when you go
24 to a lab, what things do you look at; is it
25 people, instruments, method, what?

1 A. And then some. The process of doing an on-site
2 laboratory audit, personally, I find it very,
3 very interesting, because you always see things
4 in person that you will just never see on the
5 paper.

6 So, on-site, I'm looking at everything
7 from how they actually perform the manipulations;
8 whether they use good laboratory practices;
9 whether they seem to understand the principles of
10 contamination control, which are so important in
11 a laboratory; to looking at the heating,
12 ventilating, and air-conditioning system. I'm
13 looking to see where the make up vents provide
14 air, to see whether that could be a potential
15 contamination problem.

16 I'm looking at how they set up
17 instrumentation. I'm looking at the
18 documentation maintained by the lab. I look at
19 everything.

20 Q. You look at the, specifically, protocols; is that
21 something that you examine, consider, and
22 evaluate in the process of doing these lab audits
23 you refer to?

24 A. Absolutely. Always read the protocols before
25 going on-site, to understand how they say they do

1 their method, and then watch them and look at the
2 written work that they generate to see whether
3 they, in fact, followed their method.

4 The nature of chemistry is such that
5 it's so very important to follow protocols. For
6 any time that you deviate from a protocol, then
7 you have got to make a note of it.

8 It's a lot like a recipe. Again, if you
9 don't follow the recipe exactly, then that
10 chocolate cake isn't going to be as good as the
11 one that grandma makes. But if grandma doesn't
12 want to share her recipe, and she leaves out
13 ingredients, or doesn't really follow hers
14 exactly, you're not going to be able to reproduce
15 her work.

16 The same thing applies in the
17 laboratory. As scientists, we want to be able to
18 reproduce somebody else's work. That means they
19 have to have a completely documented protocol and
20 they have to follow it.

21 Q. And do you also, as part of this analysis that
22 you go through, consider whether or not the
23 protocol is being used for the purpose that it's
24 intended and whatever limitations there may be in
25 its actual scientific validity?

1 A. What you are referring to is, essentially,
2 deciding whether or not a method is valid. A
3 method that's perfectly acceptable for use in one
4 application may be completely inappropriate for
5 use in another application. So it's really
6 essential to understand exactly the scope of what
7 you are trying to use the results for.

8 When I managed the Department of
9 Energy's Analytical Laboratory, people were
10 always calling me up on the phone asking me: So,
11 can you analyze for beryllium? Yes, sir, I can.
12 And how low can you go? What detection limit can
13 you detect, they would ask me. And I would stop
14 and say: Depends on what question you are trying
15 to answer. Because you use different methods
16 depending on different applications of the
17 results.

18 Q. All right. Did you -- Did you have an
19 opportunity to review a report by a Dr. Marc
20 LeBeau?

21 A. Yes.

22 Q. And do you know who he is?

23 A. I do.

24 Q. Okay.

25 THE WITNESS: Excuse me, is it okay if I

1 get a drink of water?

2 ATTORNEY BUTING: Sure, isn't there one?

3 THE WITNESS: Yeah, thank you.

4 ATTORNEY BUTING: Usually there's some up
5 there.

6 Q. All right. I'm going to show you some exhibits
7 that have been marked earlier in this case and
8 see if you can identify or recognize them. Do
9 you see Exhibit 435?

10 A. Yes.

11 Q. And what is that?

12 A. That's a copy of the FBI Laboratory's report in
13 this case.

14 Q. By?

15 A. Authored by Marc LeBeau.

16 Q. Okay. And have you reviewed that report?

17 A. Yes.

18 Q. All right. And I'm going to show you what's
19 Exhibit 434. And tell us what that is.

20 A. This is a nine page standard operating procedure
21 by the FBI Laboratory that describes their
22 procedure, their recipe for analysis of EDTA in
23 dried bloodstains.

24 Q. Okay. And the date of --

25 A. This particular procedure is dated 2/15/2007.

1 Q. Okay. And then, also, Exhibit 446, can you
2 identify that?

3 A. Well, without looking at every page, this looks
4 like the package that I received for review in
5 this case, that consists of a letter from your
6 office, as well as all the materials received
7 from the FBI Laboratory in this case.

8 Q. Okay.

9 A. It's about the right size.

10 Q. Okay. The -- Going to the report, do you have an
11 opinion whether this protocol, as reported in the
12 report -- the use of this protocol as reported in
13 the report -- can determine, with scientific
14 validity, whether -- if a stain is tested for
15 EDTA under this protocol, and not found, whether
16 that -- a conclusion can be given that it was not
17 present in the stain?

18 A. I do have such a conclusion, and it's based on
19 more than just the procedure, but the fact that a
20 stain -- EDTA is not detected in a stain, does
21 not mean that EDTA was not present in the stain.

22 Q. Okay. Do you have an opinion about whether -- if
23 one tests three stains and gets some results, or
24 lack of results, whatever, whether one can
25 express an opinion about what may or may not be

1 in three untested stains?

2 A. Well, I'm in the business of analytical
3 chemistry, and we're not in the business of just
4 making guesses about what might be in samples; we
5 have instrumentation to test samples and that's
6 how we determine results. There's no way for an
7 analytical chemist to know what's in a sample
8 unless we test it.

9 Q. All right. Going more particularly to the
10 materials that you reviewed, let's talk about the
11 protocol for a moment. It's 434, I believe.

12 A. Yes.

13 Q. There's a section called scope, does the protocol
14 appear to be adequate for the scope, as it's
15 defined?

16 A. Yeah, it's a very short description of scope and
17 it's an accurate description of the applicability
18 of this method. It states that this procedure
19 allows for the screening and confirmation of EDTA
20 in suspected bloodstains. So that's exactly what
21 it does, it allows you to screen for EDTA in a
22 bloodstain and to detect EDTA in a bloodstain. I
23 will mention that that's probably the shortest
24 description of method scope I have ever read.

25 Q. Okay.

1 A. They are generally much more -- there's a little
2 more scientific meat in it in terms of describing
3 under what conditions and so forth.

4 Q. Does this protocol, as its designed, or
5 reportedly designed here, you say that it -- if
6 one follows this recipe and there is EDTA
7 present, that this protocol would allow one to
8 detect it; is that right?

9 A. To detect and identify it.

10 Q. Okay. Is it also possible, from this protocol,
11 to draw any conclusions, though, if one runs the
12 tests and does not detect EDTA?

13 A. That's really the problem. The issue with this
14 procedure is not whether or not it's a valid
15 result, if you were actually detecting EDTA.
16 This is a good method. If the results end up
17 that you detect EDTA and you identify EDTA,
18 that's a good -- good indication that EDTA was
19 present in that sample.

20 The problem really occurs when EDTA is
21 not detected in a bloodstain. And the problem in
22 that regard is, from this method, I don't know
23 whether that's simply because they didn't detect
24 it, or because it wasn't there. I can't tell the
25 difference between those two, for this method.

1 I don't know, really, what their method
2 detection limit is. So I don't know whether they
3 didn't see it or it wasn't there.

4 Q. Okay. You mentioned method detection limit; is
5 there also something called instrument detection
6 limit?

7 A. Yes.

8 Q. And as you look at this protocol -- or I'm
9 sorry -- look at the report for a moment, on Page
10 2, where Mr. LeBeau indicates that, using the
11 procedure employed in this case, EDTA is readily
12 identified at a concentration of 13 --
13 micrograms?

14 A. Milligrams per litre. The common term is parts
15 per million.

16 Q. Okay. As you go through his -- the stack of data
17 there that was provided to you, is that a
18 instrumentation limit or is that a method limit?

19 A. From reviewing the data, that appears to be an
20 instrument detection limit. That is, they figure
21 that out by starting out with a 100 PPM sample
22 and they would inject that right into the
23 instrument and see if they could see EDTA. And
24 they did.

25 So they cut it in half, diluted it in

1 half, and ran it again. When they ran 50, they
2 still detected EDTA. And each time they cut it
3 in half. When they ran 25, they detected EDTA.
4 When they cut 25 in half, at 12.5, or 13, they
5 still detected it. But when they cut that sample
6 in half and cut it down to about six parts per
7 million, they were not able to detect and
8 identify EDTA.

9 So based on that, they drew the
10 conclusion that their detection limit, or limited
11 detection as they called it, was 13 parts per
12 million. That, however, represents sort of the
13 theoretical best case of injecting a sample
14 directly into the instrument.

15 It does not reflect the detection limit
16 for going out and swabbing a stain and extracting
17 the sample from that stain and diluting it before
18 you get it into the instrument. Those are two
19 different things. Instrument detection limits
20 are usually very small. Method detection limits
21 are larger. That's just sort of the natural
22 order of things.

23 Q. Okay. Well, focusing specifically on this type
24 of a method detection limit, why would it be
25 different; why would you be able to detect a

1 smaller amount if you just inject the sample
2 directly into the machine versus if you have to
3 go through the process of taking a dried stain,
4 swabbing it, extracting that, diluting it, all of
5 that? Why is there a difference?

6 A. The difference is really because there are so
7 many other complicating factors associated with
8 taking a real world sample and getting it to the
9 point where it's clean and pristine enough to be
10 able to inject it into an instrument.

11 In the case of a bloodstain, that sample
12 is on a surface, it has to be removed from that
13 surface. So it's swabbed. There may be
14 interferences from the swab. They may not
15 completely recover the stain.

16 Then they try to extract the blood
17 sample off of the swab. Extractions, generally,
18 are not completely efficient. In some of the
19 reference material in this case, some work done
20 some years ago, extraction efficiencies were
21 typically 90 percent or so, on a first run. It
22 was quite common, if you do multiple extractions,
23 to extract more DNA so -- or more EDTA.

24 So in each -- in each step of the
25 process, you will lose a little bit. There's

1 issues that arise. And so, by the time you get
2 to the instrument, your effective method
3 detection limit is much higher.

4 Q. Is it possible to determine what the effective
5 method limitation is, in this case, from the
6 materials you reviewed?

7 A. No, it is not.

8 Q. Do you have an opinion whether it is the actual
9 effective method limit of this -- this test, to
10 be able to detect EDTA in a bloodstain, is higher
11 than 13 parts per million?

12 A. Yes, I do, and I believe that it is.

13 Q. Can you quantitate how much higher?

14 A. Unfortunately, that's -- that's a study that's
15 best done empirically, by actually doing
16 analytical work. Method detection limits are
17 best determined using actual analytical work. I
18 can infer some information from the data that
19 were obtained in this case, but I can't just
20 compute one from the data that are available.

21 Q. And looking at the data that is available in this
22 stack, the validation tests that were done, and
23 those sorts of things, is there any indication
24 that the FBI ever found out what the actual
25 detection limit, or method detection limit, would

1 be for this kind of a test?

2 A. No, there's no such indication in these data.

3 Q. Okay. Well, what does that tell you about the
4 use of this kind of a protocol?

5 A. This kind of protocol, there's basically two
6 things that can happen when you run this kind of
7 a method; either you detect EDTA or you don't.
8 From an analytical perspective, the results
9 either say, yes, we detected EDTA, or, no, we did
10 not.

11 This report makes it seem like those two
12 outcomes only can arise from two conditions. And
13 it makes it seem like if the answer is, yes, we
14 detected EDTA in a bloodstain sample, then it
15 kind of makes it seem like, then that means it
16 must have come from a tube of EDTA preserved
17 blood.

18 There is -- There was reference to the
19 fact that the control samples that they took from
20 the car were blank, so that's probably the more
21 likely interpretation.

22 The problems really come if the results
23 from testing are, no, there is no EDTA present in
24 those samples. Nothing there. We didn't see
25 anything.

1 The problem is, you just don't know
2 whether EDTA -- you didn't detect EDTA because
3 there was none there, or because your detection
4 limit wasn't low enough to see it, even if it had
5 been there. That's really the problem.

6 So just because EDTA is not detected by
7 the laboratory, doesn't mean that -- that that
8 blood sample came from somebody actively bleeding
9 onto that spot. It still means, that if your
10 detection limit is out of sync with the samples
11 in question, there could be EDTA in those samples
12 from that blood tube, you just didn't see it.

13 Q. All right. Now, the next sentence in his report,
14 Dr. LeBeau's report, talks about, that EDTA is
15 also detectable when a 1 microliter drop of EDTA
16 preserved blood is analyzed. As you reviewed the
17 data in that four or five inch package there,
18 would you agree or disagree with that statement?

19 A. I disagree with that statement.

20 Q. And why is that?

21 A. Because in the results reported by the
22 laboratory, if this statement says, I tested a 1
23 microliter drop of blood from a purple-topped
24 tube, from an EDTA tube, and I detected it, the
25 problem is -- and that was done in this case --

1 the problem is, they ran a 2 microliter drop of
2 EDTA preserved blood on a spot, a more real-world
3 kind of application, and they did not detect EDTA
4 in this lab.

5 Now, gosh, that might sound a little bit
6 counterintuitive, what do you mean they could
7 detect 1 microliter, but they couldn't detect --
8 they detected EDTA in a 1 microliter sample, but
9 they didn't detect EDTA in a 2 microliter sample.

10 If, in fact, the detection limit used by
11 this laboratory was down around that level,
12 that's -- I just have to tell you, that's not an
13 unexpected result. Sometimes you see it and
14 sometimes you don't, if an element -- If a
15 compound is present near it's detection limit.

16 In fact, that's, essentially, the
17 definition of a detection limit. It means that
18 if it's present at that concentration, sometimes
19 you'll see it and sometimes you won't.

20 So to state that he -- that the lab is
21 -- that EDTA is detectable when a 1 microliter
22 drop of preserved blood is analyzed, is really
23 not a true statement, even as evidenced by his
24 own results, because he didn't detect it in a 2
25 microliter sample of blood.

1 Q. Could you maybe find the --

2 A. I will try.

3 Q. -- the information that's in there that you are

4 referring to? And I'm going to take just a few

5 moments to show that on the ELMO. You -- Did you

6 find it already?

7 A. Yes.

8 Q. Okay. I have a copy, let me just see if I can

9 work from my copy while you have that, or else

10 you can use my copy?

11 A. There's only two pages, which one do you want?

12 Q. Okay. Why don't you use mine and I will use the

13 actual exhibit on the ELMO.

14 A. Okay.

15 Q. I'm going to start and just put this first --

16 first page of this stapled packet together.

17 A. Oh.

18 Q. Do you have that?

19 A. Yes.

20 Q. At the top it says the date of 2/16/07, 12:03:08?

21 A. Yes.

22 Q. Okay. What is this?

23 A. This is, essentially, a set of data that came off

24 the LC/MS instrument from running the entire

25 batch of case samples in this case. So it

1 includes all the question samples, all the known
2 samples, and all the control samples that were
3 run by the laboratory in sequence, in time
4 sequence, so you can sort of reconstruct what
5 happened to -- which samples were run through the
6 instrument plan. And, boy, you will never be
7 able to read that on top.

8 Q. I can zoom in, when we need to, believe me. And
9 so is this kind of -- these kinds of reports
10 are -- what do you call these, spectrographs,
11 mass specs?

12 A. Yeah, it's chromatograms and spectra.

13 Q. Are these the kinds of things that you see in
14 your review of lab data?

15 A. On a regular basis.

16 Q. Okay.

17 ATTORNEY GAHN: I'm sorry, could we have
18 this marked as an exhibit so we know what we are
19 talking about?

20 ATTORNEY BUTING: I think it is. It's
21 part --

22 THE WITNESS: This is part of this big
23 package, if you -- this big one that is called
24 Exhibit 446.

25 ATTORNEY GAHN: I understand that, but I

1 would like that -- this exact page, so we know what
2 pages you are talking about.

3 THE WITNESS: Sorry.

4 ATTORNEY BUTING: Would you like to do
5 that, your Honor.

6 THE COURT: Is the page numbered in any
7 fashion?

8 ATTORNEY BUTING: No, there are no numbers.

9 THE WITNESS: Unfortunately, no.

10 THE COURT: All right. Then let's label it
11 as a specific exhibit.

12 ATTORNEY BUTING: Okay. What I would like
13 to do, there's a stapled set, just mark them
14 altogether and then we'll talk about pages in there.

15 A. This includes all the samples that were run
16 between 12:03 and 5:40 on February the 16th, in
17 time sequence order.

18 (Exhibit No. 500 marked for identification.)

19 Q. All right. We finally made it to 500. Exhibit
20 500, can you tell us what that is?

21 A. Yes, this is a dataset that represents all the
22 results from running the case samples in this
23 case. They were run on February 16th. And they
24 started at 12:03 and ran through 5:51. And each
25 of these takes about 11 minutes to run, so the

1 time dates on each of them are about 11 minutes
2 apart.

3 Q. Are these run, you know, sort of automatically,
4 or robotically, or do you need to have a lab
5 person there to do this?

6 A. It's absolutely standard practice throughout the
7 industry, that these types of instruments -- it's
8 called "rack and run". You set up your samples,
9 you extract your samples, you load the tubes into
10 a little auto sampler set in certain labeled
11 positions. Then you let the instrument
12 automatically, or robotically, sample them;
13 typically, at night, while you are at home
14 sleeping, the instrument's in the lab working.

15 Q. Okay. And then when you come in the morning,
16 does it print out something like this for you?

17 A. Yes.

18 Q. And these are, then, the reports that the analyst
19 would review to determine if -- if it seems like
20 the test ran properly, or didn't, and what the
21 results are?

22 A. Exactly.

23 Q. Okay. All right. Now, the first page of
24 these -- I'm not going to bore everybody too much
25 here with great detail, but at the top, just so

1 people understand, on the upper left, there's a
2 staple sort of blocking it, but it's like a -- it
3 looks like a computer path, right?

4 A. Yeah, it's the identification of the file. The
5 instrument's collecting all these data,
6 electronically, and that's just the file where
7 it's storing that data for the analyst to come in
8 and look at it the next day.

9 Q. So, for instance, where this says cali --
10 Xcalibur data/Brewer, Brewer being -- would be,
11 in this case, the analyst?

12 A. Yes.

13 Q. Okay. And as you go over towards the center,
14 then, it has the 2/16/07, that's the date and the
15 time?

16 A. Yes, that's the date and time stamp for the time
17 the data was acquired by the instrument.

18 Q. All right. And then over on the right, at the
19 top, what is that referring to?

20 A. That's a description of the sample --

21 Q. All right.

22 A. -- that's entered by the analyst, at the time
23 they are preparing this set to run.

24 Q. Okay. And so in each of these -- or each of
25 these pages that I'm going to flip through, do

1 they - is it one page per sample, typically, or
2 can you determine that by what's up at the top?

3 A. You have to determine that by what's at top.
4 Often -- Well, sometimes they can zoom in so
5 there will be more than one page. So I can't
6 give you --

7 Q. Okay.

8 A. -- a direct answer.

9 Q. Very good. So this first one is a blank negative
10 blood, and that would be -- that's one of the
11 controls you mentioned?

12 A. Mm-hmm.

13 Q. You have to say yes or no?

14 A. Yeah, that's a quality control sample.

15 Q. All right. The next one is negative control?

16 A. Yes.

17 Q. And then another blank?

18 A. Two more blanks.

19 Q. Two more blanks. Okay. And, then, K-2 extract,
20 what does that mean?

21 A. That's one of the samples in this case identified
22 as K-2. And this is analysis of an extract that
23 was prepared from K-2, from the K-2 swab.

24 Q. Okay.

25 A. So this isn't a case where they are actually

1 taking a liquid sample an injecting it to the
2 instrument, because those blanks were, in fact,
3 just liquid samples. This is a case where they
4 took a solid sample on K-2 and had to do the
5 extraction before they injected it into the
6 instrument.

7 Q. All right. And from your review of the
8 materials, do you know what K-2 refers to, in
9 general?

10 A. I could look it up. Under report, it's simply
11 identified as two control swabs, Item 9802.
12 There's another record in here that describes
13 where it was taken from, I don't remember right
14 off the top of my head.

15 Q. Okay. The next page is another blank?

16 A. Yup.

17 Q. Two blanks, actually?

18 A. Yeah, there's always two blanks in between each
19 evidentiary sample.

20 Q. Okay. And is that done in part to get rid of the
21 possibility of effective carryover?

22 A. It's done to both get rid of the effects of
23 carryover and to be able to identify it in the
24 event that it's happening.

25 Q. All right.

1 A. It's a very good quality control practice.

2 Q. And, by the way, let me just go back for a

3 minute, at the bottom, turn to the very first

4 page, at the bottom of each page there's some

5 handwriting; what does that refer to?

6 A. That's the initials of the responsible analyst

7 who essentially made the call. On each and every

8 sample, a qualified analyst is responsible for

9 deciding, well, is EDTA there, or isn't it; is it

10 detected, or positive, or is it not detected.

11 So -- And by signing it and making that

12 entry on each page, that's acknowledgment that

13 that individual has made that call. So in this

14 particular case, the little -- just looks like a

15 sort of scribbled M's or something, that's the

16 initials of the analyst who made the call, ND, or

17 not detected, for this particular sample.

18 Q. Okay. And since this is a blank, you would

19 expect it to be not detected?

20 A. You would hope so.

21 Q. However, there is a line on it, with a number,

22 223, at the top. Is this -- What does this

23 indicate?

24 A. It indicates that blanks are not necessarily

25 always completely blank. But that particular

1 peak is not an indication that it's EDTA that is
2 present, so it doesn't create a problem for us.

3 Q. Okay. So it's something, but it's not -- it's
4 not EDTA?

5 A. That's correct.

6 Q. Okay. Move back ahead to where we were at Q-46
7 extract?

8 A. Yes.

9 Q. Okay. And this one he -- is there a call at the
10 bottom of that?

11 A. Yes, not detected.

12 Q. Okay. And then there's two more blanks, right?

13 A. Yes.

14 Q. And the next is a K-3 extract?

15 A. Yes, not detected.

16 Q. Okay. And then two more blanks?

17 A. Yes.

18 Q. The second blank. Now, this one is a little bit
19 different, there's the 223 showing up, but
20 there's also a 293 showing up; what does that
21 tell you, if anything?

22 A. Again, it tells you that that particular item was
23 detected, but that does not meet the criteria for
24 calling it EDTA, so it's something, but it's not
25 EDTA.

1 Q. Okay. And so the conclusion of EDTA is, again,
2 another ND, not detected?

3 A. That's correct.

4 Q. Okay.

5 A. They are really only looking for EDTA here. If
6 there's other things present, there's no attempt,
7 and, in fact, the method doesn't even allow for
8 identifying what the other things were.

9 Q. Okay. The next page, then, is Q-47 extract?

10 A. Yes.

11 Q. And you understand that to be one of the question
12 samples?

13 A. That's correct. It's a swab; it's a swab
14 extract.

15 Q. And could you understand that the -- the swab
16 stains reportedly taken from the RAV4 were
17 designated Q-46, Q-47, and Q-48?

18 A. That's correct.

19 Q. Okay. And this one is called, also, ND?

20 A. Yes.

21 Q. Okay. There is, again, 275 detected, but that's
22 not a concern as far as EDTA goes, there's
23 something else?

24 A. That's correct.

25 Q. All right. Bear with me, two more blanks, K-4

1 extract.

2 A. Not detected.

3 Q. Not detected, even though there is, again,

4 something there that's 208, correct?

5 A. Correct.

6 Q. Two pages further, again, another blank, not

7 detected, but once again there are things showing

8 up, it's just not the ion --

9 A. They don't meet the rules for calling it an EDTA.

10 Q. Okay. And then Q-48 extract, not detected, as

11 well, right?

12 A. Right.

13 Q. Okay. Two more blanks. Now, lets talk about

14 this for just a moment. You get to the page, it

15 says Positive Control A (MAL EDTA extract). As

16 you review the data, what does this tell you, or

17 what is -- what is this made of?

18 A. Well, from the data, from the record, it's not

19 really possible to tell. But my understanding is

20 that this is a sample prepared by Mark LeBeau.

21 MAL represents his initials and that he

22 volunteered his blood sample for this particular

23 sample. And created -- created a purple-topped

24 tube, did an extract, and then determined that he

25 was able to actually detect EDTA in this sample

1 of his blood.

2 Q. Now, is that -- would that be considered a proper
3 positive control, in your opinion?

4 A. No, it is not.

5 Q. And why not?

6 A. Control samples, there's rules, essentially, for
7 control samples. Control samples are of known
8 origin and purity. They have been tested to
9 determine their actual composition. And then
10 there's typically a certificate of analysis that
11 tells you, we have analyzed it and we note, with
12 this degree of confidence, that this is exactly
13 what's in this sample.

14 He, essentially, just took a sample out
15 of the production line, his own, introduced it,
16 and called it a positive control. So it's not,
17 it doesn't really conform to sort of the -- the
18 quality standard for what a positive control is.

19 Q. So when you say a certified known quantity, but
20 here, this is a control in order -- he is using
21 this as a control to -- just to find EDTA; is
22 that right?

23 A. Yes, to see whether he can detect EDTA during the
24 course of this run.

25 Q. So what would be a proper positive control for

1 that?

2 A. If they had a whole blood standard, and there are
3 supply houses that sell those kind of whole blood
4 standards, that had a known quantity of EDTA
5 present in it.

6 Q. So there are commercial labs that sell certified
7 specific --

8 A. Yes.

9 Q. -- things like this?

10 A. Yes.

11 Q. And those are intended to be used as a positive
12 control?

13 A. That's correct. Those are reference materials
14 intended for that use.

15 Q. Well, why would this be any different, if he puts
16 it in a purple-topped tube?

17 A. Because he doesn't know how much EDTA is in that
18 purple-topped tube.

19 Q. Okay.

20 A. So the fact that he detected it means it was
21 there, but how significant is that? Was that --
22 was that a very concentrated sample or a very
23 diluted one; he doesn't really know.

24 Q. Do -- Does the quantity of EDTA that one finds in
25 these commercially prepared purple-topped tubes

1 vary?

2 A. Yes.

3 Q. By how much, typically?

4 A. I don't know. I wasn't able to find any very
5 specific actual lab data reporting that. But in
6 the FBI Lab's own protocols, they describe it as
7 ranging typically from a thousand parts per
8 million to two thousand parts per million. So
9 it's a fairly broad range.

10 Q. Okay. Now, at the bottom of this, there's some
11 handwriting as well. What does this appear to
12 be, or what does this tell you?

13 A. Actually, this is an indication that, apparently,
14 this person whose initials look like some kind of
15 an M, went through and initially called this as a
16 not detect. Because you have seen this quite a
17 few times already this morning, the initials and
18 then ND circled, but then subsequently the
19 analyst went back and decided, you know what, I
20 think this really meets the criteria for being
21 able to call it EDTA, so they changed their mind,
22 lined out the not detected and indicated that it
23 was positive. And that's why there's a second M
24 up there, they indicated when they made that
25 decision to change that call.

1 Q. Okay. And this is even on a sample of
2 Mr. LeBeau's own blood?

3 A. Yes. This is the sample of an extract prepared
4 from Mr. LeBeau's own blood.

5 Q. Okay. And, then, keep looking -- bear with me
6 again -- another couple of pages of blanks. And
7 then we get to something called Positive Control
8 B, Q-49 extract; what is this?

9 A. I have to interpret this based on the information
10 you see there. They are calling this a positive
11 control, a second positive control, in this run.
12 However, it's an extract of Q-48, which --

13 Q. Q-49?

14 A. Q-49, excuse me, which tells me it's a question
15 sample, it actually is an extract of Q-49, which
16 is the liquid blood sample from Mr. Avery. Why
17 they are calling it a positive control, truly is
18 a puzzle to me. That is not what a positive
19 control is. This is a question sample. It's a
20 case sample. It's an unknown sample, as far as
21 this laboratory is concerned.

22 Q. Okay. And in this particular one there is an
23 indication of positive?

24 A. Yes.

25 Q. Okay. The next page, what's this? It has the

1 same heading or the same --

2 A. Same sample description, same date and time.

3 These -- This is a different display of the same

4 electronic file. So all they are doing is going

5 in and zooming in on part of the spectrum from

6 the previous page that -- in order to try to

7 decide and confirm the assignment. It's a normal

8 kind of a practice.

9 Q. And so this reference up here, zoom?

10 A. Yeah, parenthetically, the analyst went in there

11 and noted that this is simply a zoom of that same

12 file.

13 Q. So this is a zoom page of the very same page

14 right before it?

15 A. That's correct.

16 Q. All right. Two more blanks, and now we come to

17 something called Spot LOD, 1 microliter?

18 A. Yes.

19 Q. This has -- This is also called a positive?

20 A. This sample is called positive, yes.

21 Q. Okay. And the three ions that they seem to be

22 looking for through all these tests are a 160, a

23 247, and a 132, and certain ratio to each other,

24 right?

25 A. I -- You know what, I would have to look those

1 up, because I haven't been that familiar with it,
2 but there are certain characteristic ions that
3 are EDTA and it's not just the presence of those
4 ions, but the relative ratios of those ions that
5 matters to the interpretation.

6 Q. Well, let's just go back for a second to Mr --
7 Mr. LeBeau's own blood and see the ions that are
8 reported here that are showing up as detected,
9 the one that he had crossed out and then put
10 positive, just a couple pages back?

11 A. I must have missed it. Oh, okay.

12 Q. Okay. And what are the ions that are being
13 reported by the instrument in this?

14 A. There are -- There are three ions that are
15 reported, 132, 160, 247, 293. There's actually
16 four that are present in this sample.

17 Q. And 160 is the one that's always expressed at
18 the -- the highest is always up at the top?

19 A. Yeah, this -- if you look at that scale there, it
20 goes from 0 to 100, on the left, no matter how
21 much of the compound is present, it always sets
22 that at 100 percent. That's essentially a
23 percentage. And the highest peak is always set
24 at 100 percent and everything else is measured in
25 relation to that highest peak. Whether it's one

1 inch tall or a foot tall, the highest peak is set
2 at 100 percent.

3 Q. And does that mean -- does that have any
4 indication about the quantity of the -- of the --

5 A. No.

6 Q. -- of the substance that they found?

7 A. No, it's simply that the most abundant peak that
8 we saw, the ion that was there with the highest
9 frequency, the most abundance, is set at 100. It
10 doesn't relate to the quantity at all.

11 Q. Okay. If we could flip back to where we were, at
12 the Spot LOD, 1 microliter, a few pages later.

13 A. Okay.

14 Q. Start at 5:07:38 seconds?

15 A. Mm-hmm.

16 Q. Okay. This one is marked as a positive, right?

17 A. Yes.

18 Q. Do you see any -- or what ions do you see
19 expressed in this?

20 A. It has three of the four that you saw in the
21 previous sample; it has 160, 247, and 293.

22 Q. All right. Now, what's the very next page?

23 A. A blank.

24 Q. No, before that, the zoom?

25 A. Oh, okay, sorry, I was looking at the zoom page.

1 Q. Oh, you were, okay.

2 A. Yeah. The first page has those three ions, the
3 second page, just like the previous example, is a
4 zoom of the same result.

5 Q. And even though it's a zoom, is there any --
6 there's still not a 132 ion showing, right?

7 A. That's correct.

8 Q. But it's marked as a positive?

9 A. That's correct.

10 Q. Okay. We're almost done, two more blanks. And
11 now we come to the second to the last page of
12 this exhibit. This is February 16, 5:40 at 13
13 seconds, right?

14 A. Yes.

15 Q. It says Spot LOD, 2 microliters, at Q-49. By the
16 way, just so we're clear, what does this tell
17 you, the way it's designated as Spot LOD?

18 A. It appears that the laboratory is trying to
19 decide a detection limit for a sample of blood
20 that's collected from the Q-49 file, that they
21 are actually trying to use the purple-topped tube
22 that was submitted in this case, and trying to
23 see whether or not I can see 1 -- I can see EDTA
24 in a 1 microliter sample and whether or not I
25 could see EDTA in a 2 microliter sample. So

1 they're actually trying to empirically determine
2 whether they can even see EDTA when they know
3 that it's a sample from Mr. Avery's tube of
4 blood.

5 Q. And does this relate, then, to the sentence, the
6 remark in Mr. LeBeau's report, that,
7 specifically, EDTA is detectable when a 1
8 microliter drop is analyzed?

9 A. Yes. This is 2 microliters that's displaying on
10 the screen right now, but I would conclude, from
11 his report, that he is referring to when he ran a
12 1 microliter sample, he detected and identified
13 EDTA. And so that's the source of his statement
14 in the report.

15 Q. That's the one we saw that shows three of the
16 four ions, but is missing one of them?

17 A. Yes.

18 Q. Now this one, though, what's marked at the bottom
19 of this page? Is there any call made on this
20 page?

21 A. Yeah, this is the 2 microliter sample, so they
22 are taking --

23 Q. A bigger sample.

24 A. -- a tube of Mr. Avery's blood, and instead of
25 just extracting a 1 microliter stain, they are

1 taking a 2 microliter sample of his blood and
2 taking it through the process. In this case,
3 when they ran it through their process, they did
4 not detect EDTA. This is a sample that they took
5 from Mr. Avery's purple-topped tube, 2
6 microliters, they did not detect EDTA.

7 Q. Well, on this particular page, his initials are
8 there, but he doesn't appear to be making a call?

9 A. Yeah, I can infer from that that as he was going
10 through these results, when he got -- he
11 expected, probably, to see EDTA, because he had
12 seen it in the 1 microliter sample. And when he
13 got here, he probably said, oh, this doesn't meet
14 the criteria. This isn't passing. What's going
15 on. So if you go to the next page, he zoomed
16 in --

17 Q. I will in just one second, but this one does show
18 a 133 ion, a 160, and where are we?

19 A. You're making me dizzy.

20 Q. I'm sorry. And a 247, which are three of the
21 ones you were looking at before. Why wouldn't
22 this -- Why isn't he making a call that it's
23 present in this instance?

24 A. I can only infer that, because he doesn't
25 indicate that in any of his records, the basis

1 for whether he made a call or not. However, this
2 does not conform to the FBI Laboratory's own
3 rules for making a call, because I got a copy of
4 their procedure for mass spectral interpretation.
5 And this has an ion ratio problem. You may
6 recall that the 160 is usually the biggest peak
7 that relates to very characteristic ion.

8 Q. Right.

9 A. In this sample, 160 is not the biggest peak, that
10 -- this 293 is the --

11 Q. Over here.

12 A. -- is the large peak. Yeah.

13 Q. Okay. So then --

14 A. It flaunts their own ion ratio rules for making
15 an assignment.

16 Q. Okay. So then what does he do then; what's the
17 very last page?

18 A. On the very last page, he zoomed in to see if
19 there was any more information he could elicit
20 from doing a more detailed analysis.

21 Q. And how can you tell this is a zoom of the very
22 same results, other than obviously he's got it
23 written there?

24 A. Again, it's because it's the same date and time.
25 So it's just processing exactly the same

1 electronic file, looking at the same data, just
2 zooming in on it.

3 Q. Okay.

4 A. Much like we can do when we zoom in on things on
5 a computer.

6 Q. And when he zooms in, does he get the same --
7 have the same issue, same problem?

8 A. Yes.

9 Q. Once again, 160 is not at the right ratio; so
10 then what does he call?

11 A. So he makes a call on this sample, this 2
12 microliter sample, as not detecting any EDTA.

13 Q. All right. I'm -- Just so we're clear, there's
14 one last page, and it's a blank?

15 A. That's correct.

16 Q. All right. So, in his report, then, when he says
17 that EDTA is also detectable as low as a 1
18 microliter drop, his own data, does it support
19 that at all?

20 A. The problem is, he has data that indicates he can
21 not detect EDTA in a 2 microliter drop. That
22 kind of a result is entirely consistent with the
23 fact that his method has a hard time detecting it
24 at the concentrations in question here.

25 It's an overstatement, if you will, to

1 say it can be -- to say -- I want to get the
2 exact words -- to say that it's detectable when a
3 1 microliter drop of EDTA preserved blood is
4 analyzed. That's an overstatement, because his
5 own data shows that he can't detect it in a 2
6 microliter spot.

7 Q. All right. Now, his data did -- or he does
8 express the opinion that EDTA was detected in
9 Q-49, the tube of Mr. Avery's blood, 11 year old
10 tube, right?

11 A. Yes.

12 Q. Is there any data that quantitates how much that
13 EDTA is there?

14 A. None.

15 Q. You mentioned before that, you know, a new,
16 pristine, brand new blood tube sample, according
17 to his own protocol, would be between a thousand
18 and 2,000 parts per million, EDTA concentration,
19 right?

20 A. Correct.

21 Q. Is there any way to tell whether or not, after 11
22 years, the EDTA that would have been in
23 Mr. Avery's purple-topped tube is -- has degraded
24 down to even a barely detectable limit?

25 A. There certainly -- If they quantitated how much

1 EDTA was present; they did not do that. They
2 simply identified the fact that EDTA was present
3 in Mr. Avery's blood sample. They made no
4 attempt to say how much EDTA was present.
5 Obviously, I don't know how much was present 11
6 year ago, but they could have looked in the
7 sample now to see how much was present in his
8 blood today. But their method was not designed
9 to do that and was never validated to do that.

10 Q. So when they find a positive result for EDTA in
11 that Q-49 tube of Mr. Avery's blood, it could be
12 a thousand parts per million or 50 parts per
13 million?

14 A. We just have no way of knowing, no way at all of
15 knowing.

16 Q. And is EDTA the kind of chemical that will
17 degrade over time?

18 A. It's like any other chemical, it's dependent on
19 the conditions that it's exposed to in a length
20 of time. Chemicals, in general, are subject to
21 degradation from things like light and
22 temperature and biological activity.

23 I have not -- I don't know what the
24 degradation curve is for EDTA, but in analytical
25 chemistry, we put shelf lives on materials. And

1 the manufacturers who certify their reference
2 materials and who certify their results, know how
3 long that material is stable in that environment.
4 So they assign a shelf life, much like the FBI
5 did in their procedure. Their procedure for
6 analysis of EDTA in bloodstains has requirements
7 for preparation of EDTA solutions, and they
8 impose a shelf life on them.

9 Say that their EDTA performance mix that
10 has EDTA in water is stable for a period of at
11 least six months, what that means is, when you
12 get past six months they can't use it any more.
13 It's just like when milk is a week past it's
14 expiration date, you shouldn't be drinking it.

15 Q. And that's their own protocol imposes a six month
16 limit on a solution that they mix up of known
17 EDTA, right?

18 A. Yes.

19 Q. Commercially purchased.

20 A. Yes, of reagent grade EDTA, that's of known
21 purity and we actually know its chemical
22 composition.

23 Q. All right. If you would step over here, please,
24 we have had some problems today and yesterday
25 with Mr. Strang's computer being able to project.

1 THE COURT: Mr. Buting, can I ask how long
2 you think your direct is going to continue yet.

3 ATTORNEY BUTING: Just one moment. Not
4 much more; we could probably finish in about five
5 minutes I would think.

6 THE COURT: All right. You can have five
7 minutes, go ahead.

8 ATTORNEY BUTING: Okay.

9 Q. (By Attorney Buting)~ For some reason -- This is
10 the videotape that we showed the jury a couple of
11 days ago, and for some reason I'm not able to get
12 it up there, but it is on the computer screen
13 here. Do you see anything that looks like an
14 expiration date on this particular tube?

15 A. Yes.

16 Q. Okay. You can retake your seat. And tell the
17 jury what you see as an expiration date on this
18 11 year old tube of blood, Q-49, that is
19 Mr. Avery's blood that was found in the Clerk's
20 Office.

21 A. These tubes are routinely manufactured and
22 provided by their manufacturer with expiration
23 dates. In this case, it's March of '96.

24 Q. So when Mr. LeBeau tested this tube for the
25 presence of EDTA in February of 2007, he was

1 testing it approximately -- almost 11 years
2 beyond its expiration date?

3 A. That's correct.

4 Q. All right. Having reviewed all of this data,
5 then -- By the way, were you able to see
6 Mr. LeBeau's testimony, recorded?

7 A. Yes, the online streaming video, I was able to
8 see it there.

9 Q. Okay. And did you see the PowerPoint
10 presentation where he talked about his thought
11 process or the hypothesis he was considering?

12 A. Yes.

13 Q. And he mentioned only two, do you recall that?

14 A. Yes.

15 Q. Could you talk about that for a moment, what you
16 think about that?

17 A. Yeah, he, essentially, says that, when I get
18 results -- when I get results from the
19 laboratory, it either shows that EDTA is detected
20 or not detected. Those are the only two options.

21 I agree that those are the only two
22 options that can come out of his protocol. It's
23 either detected or it's not.

24 But then he draws the conclusion that in
25 the event that it's not detected, which is the

1 case here, in these stain samples, in the event
2 that EDTA is not detected in the stain samples,
3 he draws the conclusion that that means it must
4 have come from active bleeding, rather than from
5 Mr. Avery's tube. That's just simply not
6 supported by the actual laboratory results in
7 this case.

8 Q. And why not, is there some other conclusion?

9 A. Yes, it certainly is quite plausible that the
10 bloodstains that were swabbed from the RAV4
11 contained EDTA, but the lab simply was not able
12 to detect it, as was the case in that 2
13 microliter sample of Mr. Avery's blood that they
14 attempted to test and were not able to detect
15 EDTA.

16 Q. And, for the record, we have finally been able to
17 display the still, frozen part of the video of
18 the -- I don't know the exhibit number -- 1 --
19 470, where the container contain -- the tube of
20 blood was opened at the Clerk's Office. And do
21 you have a laser pointer available? No, no laser
22 pointer here today?

23 ATTORNEY KRATZ: Oh, I have one.

24 ATTORNEY BUTING: Oh, you do. Can I borrow
25 it, please?

1 ATTORNEY KRATZ: Sure, let me help you out.

2 ATTORNEY BUTING: There you go. Thank you.

3 Q. (By Attorney Buting)~ Could you point with the
4 laser to what you were referring to when you were
5 talking about expiration date.

6 A. Okay. It's upside down here, so you have to see
7 that it's upside down. It's right here, it says
8 EXP March '96.

9 Q. So from this data -- Well, let me just make it
10 clear for the jury, first of all. Were you able
11 to actually test any of these samples in this
12 case?

13 A. No.

14 Q. All right. And when did you receive the
15 materials that you have in front of you?

16 A. Late on Tuesday, this week.

17 Q. Okay. But it refers to tests that were done just
18 last week on March -- or February 26?

19 A. This is probably the fastest turn on any data I
20 have ever reviewed.

21 Q. What would be a more typical length of time for
22 one to do a -- develop a brand new protocol and
23 validate it and do all that?

24 A. Development, validation, performance of the
25 testing of unknown samples, is usually -- you

1 know, there's no set rules, but it's usually
2 something that takes considerably longer than the
3 very aggressive time frame in this case. In this
4 case, they were actually running the case samples
5 before they even had the results of their
6 competency sample, so it was very, very
7 compressed.

8 Q. And, so, from this data, can you express any
9 opinion about whether the 3, as Q-46, 47, and 48,
10 questioned stains examined by Mr. LeBeau, could
11 have come from the blood sample, the blood tube,
12 Q-49, that was also examined?

13 A. It's quite consistent with the results that were
14 presented by the laboratory. Because of their
15 inability to detect EDTA in the 2 microliter
16 sample of Mr. Avery's blood, it's quite possible
17 that those blood swabs could have come from
18 Mr. Avery's blood tube, but simply not been
19 detectable by the laboratory.

20 Q. And what about the three swabs from the RAV that
21 were not tested by Mr. LeBeau; can any conclusion
22 be drawn on that?

23 A. I'm an analytical chemist, I'm not in the
24 business of just guessing on some samples. We
25 have to test samples to decide what's in them.

1 Q. Is there any kind of a -- We were talking about a
2 limit of detection, and, you know, what the
3 method can detect. And a lot of this is
4 technical stuff for us lay people. Is there any
5 kind of analogy that you can draw about, you
6 know, some sort of instrument, or some sort of
7 detection limit that we have?

8 A. You gave me the entree. This -- We have pretty
9 good detection limits. Our noses are able to
10 smell things. People are -- have different
11 sensitivities to different smells. And that
12 means we have different instrument detection
13 limits, if you will.

14 Some of us can detect things that are
15 present at very, very low levels. And some of us
16 require that more of it be present before we can
17 detect it. So our nose is analogous to an
18 instrument, in terms of its ability to detect a
19 smell.

20 Q. So if one was blindfolded and given a -- say a
21 warm apple pie or something, and asked, can you
22 smell an apple pie, is that an example of your
23 nose being able to detect something?

24 A. Yeah. Yeah. And although I suspect that most of
25 us who at least have well-functioning noses could

1 detect a warm apple pie if there were no
2 complications, if that apple pie was present in a
3 room with a lot of other smells, or the doors and
4 the windows were open and there was a brisk wind
5 blowing through, you might not be able to detect
6 it. Doesn't mean that the apple pie is not
7 there, doesn't mean it's not giving off odor, it
8 just means you can't detect it. So that's the
9 difference between an instrument detection limit
10 and a method detection limit.

11 Q. All right. And, finally, as a matter of
12 scientific adequacy, can the protocol that
13 Mr. LeBeau developed, I think it's 434, be used
14 to rule out the presence of EDTA in those three
15 RAV4 bloodstains that were tested, just because
16 it's not detected in their tests?

17 A. No.

18 Q. And why not?

19 A. Because we just don't know what the method
20 detection limit of his method was, as evidenced
21 by the fact that he couldn't detect a 2
22 microliter sample of Mr. Avery's blood -- he
23 couldn't detect EDTA in a 2 microliter sample of
24 Mr. Avery's blood.

25 Q. So even having gone through this test, is it

1 possible that EDTA is, or was, in those 3 RAV4
2 stains?

3 A. Yes.

4 Q. Thank you.

5 THE COURT: All right. At this time we'll
6 take our morning break. We'll resume in 15 minutes.
7 Members of the jury, I will remind you, again, not
8 to discuss this case, this morning's testimony, or
9 any other element about the case during the break.

10 (Jury not present.)

11 THE COURT: All right. Counsel, we'll
12 return in 15 minutes.

13 ATTORNEY BUTING: All right.

14 (Recess taken.)

15 (Jury Present.)

16 THE COURT: Mr. Gahn, will you be doing the
17 cross-examination for the State?

18 ATTORNEY GAHN: Yes, I will.

19 THE COURT: You may begin.

20 ATTORNEY GAHN: Good morning.

21 THE WITNESS: Good morning.

22 **CROSS-EXAMINATION**

23 BY ATTORNEY GAHN:

24 Q. I would first like to explore a little more, I
25 looked over your resumé, and a little more of

1 your experience, actual hands-on-experience with
2 the LC/MS/MS technology?

3 A. I have operated liquid chromatographs and mass
4 spectrometers. I have not operated them
5 configured, essentially connected together in the
6 manner in which they were in this case.

7 Q. Okay. And -- And could you just describe the
8 difference in the way they were connected
9 together in this case and what you are familiar
10 with.

11 A. I'm not sure I understand your question. The
12 physical difference between how they are
13 interfaced or?

14 Q. No, if you, yourself, have not performed
15 analysis, on chemicals, using the LC/MS/MS
16 technique?

17 A. That's correct.

18 Q. Have you ever performed any type of analysis to
19 test bloodstains for EDTA?

20 A. No.

21 Q. Have you ever conducted any type of analysis to
22 detect blood EDTA levels in a lavender-topped
23 tube?

24 A. No.

25 Q. How about any type of blood collection tube?

1 A. No.

2 Q. You talked about blood collection tubes and -- in
3 reference to the expiration date; what is your
4 experience with blood collection tubes?

5 A. Part of what I do when I assess data quality, if
6 the sample was collected in any particular
7 container, be it a blood collection tube or any
8 other kind of container, part of what I'm doing
9 is seeing whether that container was appropriate
10 to protect the integrity of the sample, so that
11 its composition was not altered or degraded over
12 time to the extent possible by its interaction
13 with the tube.

14 So whether it's in a quart jar, or a
15 purple-topped tube, I'm looking at, did they know
16 that that container was of appropriate
17 cleanliness before the samples were put in, and
18 that type of thing. And these things are
19 typically purchased in lots. And they are
20 certified for a particular lot. So that
21 manufacturer has actually tested those samples,
22 made sure that they met their specifications, and
23 certify the lot.

24 If there's a problem, then they can go
25 back and find out which lot caused the problem,

1 just like they could find out which peanut butter
2 had the problem and so forth. So it's a lot
3 identification.

4 Q. So, again, what is your personal experience on
5 how a purple-topped tube works?

6 A. My personal experience with how it works?
7 Obviously, I have the same lay experience that
8 everybody in the courtroom does with when I have
9 had blood samples collected. My experience as a
10 quality auditor is simply reconstructing the
11 paper trail associated with the integrity of that
12 sample.

13 Q. Are you stating that the expiration date on that
14 vacutainer applies to the stability of EDTA?

15 A. No, sir.

16 Q. What does the expiration date on the
17 purple-topped tube, ma'am, apply to?

18 A. The expiration date is determined and assigned by
19 the manufacturer. And it provides the user with
20 a date beyond which they cannot certify the
21 appropriateness of that tube for it's intended
22 use; that is, protecting the integrity of that
23 blood sample.

24 And that's a combination of all the
25 things that go into that. It's the combination of

1 maintaining the integrity of the vacuum, the
2 EDTA. It's the package. They don't have
3 separate expiration dates.

4 Q. What can you point to that states that the
5 expiration date on the purple-topped tube
6 pertains to the stability of EDTA?

7 A. Nothing. It does not do that.

8 Q. All right. I just wanted to make that clear.
9 The expiration date has to do with the efficiency
10 of the vacuum in the tube; isn't that true?

11 A. It's not just the vacuum; it's the entire package
12 for its inappropriate use. They don't try to
13 parcel out the parts.

14 Q. You are not stating that, because of that
15 expiration date, the EDTA has broken down?

16 A. Oh, no, sir. No.

17 Q. Thank you. That's all I needed.

18 A. Okay.

19 Q. I just wanted to clear that up. Mr. Buting put
20 up a number of exhibits that you looked at. And
21 one of the things I noted was that you only
22 looked at the results in what is concerned --
23 called the positive ion mode; is that correct?

24 A. When he went through the page by page one?

25 Q. Yes.

1 A. This is the one on the 16th -- You know, I'm
2 not -- I don't remember if this was positive or
3 negative; I would have to go back and look at the
4 sequence.

5 Q. Could you do that?

6 A. Okay. No, sir, I believe it's the negative ion
7 mode. Is there some misunderstanding of which
8 data we're actually talking about?

9 Q. My understanding is that the data that Mr. Buting
10 put up, for you to look at, was from the positive
11 ion mode; isn't that correct? First of all, what
12 is the positive ion mode?

13 A. It's just the operating mode for the instrument,
14 whether you are looking at positive ions or
15 negative ions.

16 Q. And what does this look at for the EDTA? What is
17 it looking for in the EDTA?

18 A. In the course of the analysis, I believe you have
19 probably already heard a brief introduction of
20 this, a mixture is separated into its component
21 pieces, or its component chemicals, with use of
22 the chromatography instrument, used with the
23 liquid chromatography.

24 And then as each set of chemicals comes
25 out, or each package of chemicals comes out, is

1 introduced in the mass spectrometer where it's
2 frag -- it's subject to very high energy and it's
3 fragmented. And when it breaks into pieces, the
4 mass spectrometer then detects those
5 characteristic fragments.

6 Q. What I'm asking for is, in the positive ion mode,
7 what form of EDTA are you looking at?

8 A. Well, I'm -- I'm not -- What am I looking at?
9 It's -- In this case --

10 Q. In this case, what did the FBI's Laboratory
11 protocol, what form of the EDTA did it look at in
12 the positive ion mode?

13 A. It's -- It's actually, analytically, the sample
14 can contain EDTA in any number of forms. And so
15 it can be present as a sodium salt. It can be
16 present -- During the course of extraction, it's
17 converted largely into -- During the course of
18 extraction and interaction with the blood calcium
19 in iron; is that what you are asking, whether
20 it's the ion form or --

21 Q. I guess what I'm looking for is whether it's --
22 what form and whether it's in its free acid form
23 or in its comp -- metal or -- metal iron complex?

24 A. We can look for both.

25 Q. You can look for both?

1 A. Oh, sure.

2 Q. Okay. And what I'm asking you is, what form did
3 the FBI look for in the positive ion mode?

4 A. Oh, I don't know. I would have to -- I believe
5 it was the free acid, but I would have to look.
6 If that's what --

7 Q. You don't have to, I will agree with you.

8 A. Okay.

9 Q. Maybe we can come to some agreements here --

10 A. Okay.

11 Q. -- and it will be easier for the jury.

12 A. Okay.

13 Q. And in the negative ion mode, is it fair to say
14 they were looking for the forms of EDTA, not only
15 in free acid form, but also in the metal iron
16 complex?

17 A. That's correct.

18 Q. Okay.

19 A. That's correct.

20 Q. Now, back to my original question.

21 A. Okay.

22 Q. The data that you looked at and you showed up on
23 the big screen, wasn't that only from the
24 positive ion mode; only -- in other words, only
25 in its free acid form?

1 A. Yes, you are targeting, specifically, the ions
2 attributable to that -- from that one breakdown,
3 yes.

4 Q. So no data in the negative ion mode was shown on
5 the big screen, correct?

6 A. I don't remember, but there's some in the
7 package, if that's your question.

8 Q. That's my question. Did you display, or did
9 Mr. Buting display, any of the data in the
10 negative ion mode, which would be in the free
11 acid and in the iron complex forms?

12 A. I don't remember if he did.

13 Q. Well, let me ask you this, then, ma'am.

14 A. Okay.

15 Q. Do you remember reviewing that data?

16 A. Yeah.

17 Q. And what did -- What did the data tell you in the
18 negative ion mode?

19 A. Well, it's -- it's quite clear that -- I don't
20 know what you mean, which data you are talking
21 about, but it's quite clear that the method is
22 capable of detecting EDTA and -- and its iron
23 complex, as I would expect to be the case.

24 Q. So the protocol that the FBI put together is
25 capable of making an analysis for the presence of

1 EDTA in a lavender-topped tube, correct?

2 A. Yes, that's correct.

3 Q. And, likewise, in a non-preserved tube?

4 A. Yes.

5 Q. And, likewise, in dried bloodstains?

6 A. Yes.

7 Q. Now, did you read any articles or publications

8 that had to do with the analysis of EDTA in dried

9 bloodstains?

10 A. Only those articles that were provided by the FBI

11 Laboratory as part of their foundational

12 reference material along with this case.

13 Q. I'm going to ask that Mr. Fallon hand you two

14 exhibits. And I would ask you to identify each

15 of them for us, please.

16 A. Yes, sir. Exhibit 436 is an article from the

17 *Journal of Analytical Toxicology, The Analysis of*

18 *EDTA -- sorry, I'm going too fast -- in Dried*

19 *Bloodstains by Electrospray LC-MS-MS and Ion*

20 *Chromatography.*

21 Q. Let's stick with that one just for a minute.

22 A. Okay.

23 Q. Did you read that?

24 A. Yes.

25 Q. And is analytical -- I'm sorry, was that

1 Analytical Chemistry or Toxicology?

2 A. This particular one is Analytical Toxicology.

3 Q. And the *Journal of Analytical Toxicology*, is that
4 a well recognized scientific publication?

5 A. Yes, it is.

6 Q. And it's scholarly authoritative in the field?

7 A. Yes.

8 Q. And an article such as this would be a peer
9 reviewed article?

10 A. Yes.

11 Q. And that article also determined that it's
12 possible to test for the presence of EDTA in
13 dried bloodstains?

14 A. That's correct.

15 Q. And, also, the article, which would be the next
16 exhibit, please, could you state where that was.

17 A. That's an article from *The Analytical Chemistry*,
18 Exhibit 437, dated August 1st, 1997.

19 Q. And that, also, is a scholarly, authoritative,
20 scientific publication?

21 A. Analytical Chemistry is, yes.

22 Q. How about Analytical Toxi -- I'm sorry --
23 Analytical Chemistry?

24 A. Yes.

25 Q. And, again, that would be a peer reviewed

1 article.

2 A. I presume so.

3 Q. And, again --

4 A. This is a web version. I don't -- I don't know
5 if this was one of the ones subject to the same
6 peer review, but I would presume so.

7 Q. And did you -- When you read the FBI protocol and
8 compared it to those two articles, did you note
9 any improvements that the FBI made in the
10 development of the protocol that was used in this
11 case?

12 A. Yeah, I would presume that there were several
13 things that they did that would have to be
14 considered improvements against these early
15 versions.

16 Q. And could you tell us what those improvements
17 were that they made?

18 A. Their extraction procedure is substantially
19 different. One of these techniques uses
20 capillary electrophoresis instead of liquid
21 chromatography. They each have their own issues.
22 They are using tandem mass spec, mass spec, mass
23 spec, in the FBI's method. And the extraction
24 procedures are substantially different. I would
25 have to presume that those -- that they did those

1 because they considered it to be an improvement.

2 Q. Do you believe it was an improvement, by doing
3 the analysis, looking for not only the free acid
4 form and also the iron complex form of EDTA?

5 A. That would be considered a benefit.

6 Q. Correct.

7 A. Yeah.

8 Q. And why would that be a benefit? Why would you
9 want to look for it in the negative ion mode in
10 both forms?

11 A. Well, because it's a better -- essentially, if
12 you will, a better recovery, better understanding
13 the path that EDTA took in your samples.

14 Q. So there were significant improvements made in
15 this current protocol over the two articles that
16 you --

17 A. Oh, certainly, yes. Science isn't static, we
18 hope to improve it all the time.

19 Q. All right. Thank you. With that, significant
20 improvements, I do note from your direct exam
21 that you had a little problem with the -- I
22 guess, what, the uncertainty of their measurement
23 system, or their -- that -- their detection
24 level?

25 A. Detection limit -- method detection limit, that's

1 correct.

2 Q. What is the difference between a qualitative
3 assay and a quantitative assay?

4 A. That's a very good question. A qualitative assay
5 or qualitative measurement doesn't tell you how
6 much of something is present; it simply detects
7 it and identifies it. So, qualitatively, I can
8 say that EDTA is present, but it says nothing
9 about how much EDTA is present.

10 In contrast, a quantitative assay tells
11 you how much of something is present. There is
12 an entirely different calibration protocol to get
13 to how much of a given compound is present.

14 Q. And both are scientifically sound procedures?

15 A. Absolutely.

16 Q. And how would you characterize the FBI's protocol
17 or testing methodology in this case?

18 A. This is a purely qualitative method.

19 Q. And that, again, is a valid scientific method of
20 developing an analysis methodology?

21 A. Absolutely.

22 Q. Now, if you would please pick up the -- their
23 protocol, please. Do you have that?

24 A. The FBI's protocol?

25 Q. Yes, please.

1 A. Yeah. Yes. Okay.

2 Q. And on Page 7, under Paragraph 14, Limitations,
3 No. 8, the Limit of Detection, is it -- it was
4 your testimony that this was under a valid method
5 for determining their limits of detection?

6 A. It's not a universally used method, but it's an
7 appropriate means of getting to an instrument
8 detection limit.

9 Q. And one that could be used in detecting the
10 levels of EDTA, whether in a purple-topped tube
11 or in a dried bloodstain?

12 A. No, the method that they used, that they referred
13 to in this paragraph, is simply a means of
14 determining an instrument detection limit. So
15 it's -- it detects how much -- it gives you an
16 indication of how much EDTA you can detect from a
17 solution that you actually take a syringe and
18 inject into the instrument. It doesn't tell you
19 anything about how much EDTA you can detect from
20 a stain sample.

21 Q. But this limitations in their protocol clearly
22 state, and the data shows, that they are able to
23 detect -- 1 microliter drop is readily detectable
24 in this protocol?

25 A. I don't believe that that's true.

1 Q. So when they state that the 1 microliter drop was
2 readily detectable using this technique, are you
3 saying that's not true?

4 A. That particular statement is in reference to this
5 paragraph about a separate LOD study where some
6 EDTA was placed into a lavender-topped tube.
7 That's not what I'm referring to when I say they
8 had problems detecting it in a 2 microliter spot.
9 I'm referring to the actual case samples in this
10 case, where they -- where they were not able to
11 detect it from a 2 microliter set of blood, of
12 Mr. Avery's blood, as opposed to this one, which
13 is a more sort of theoretical, pristine case.

14 Q. I think we're talking about the same thing, but
15 maybe my question was not very good.

16 A. Okay.

17 Q. The system that they developed, the methodology
18 that they developed, allows them to detect levels
19 of EDTA to the 1 microliter level?

20 A. Okay. The reason that's not a true statement,
21 generally, is because we don't know how -- the
22 concentration of EDTA that's present in that
23 microliter. I don't know if there's 100
24 micrograms or 1 microgram present in that 1
25 microliter sample.

1 So saying it's possible to detect EDTA
2 in 1 microliter of blood really, scientifically,
3 doesn't mean much unless you also know the
4 concentration of EDTA. In this case, they state
5 that the 1 microliter drop that they prepared
6 from -- from a whole blood sample and known EDTA,
7 they knew the concentration of EDTA in that
8 sample.

9 I was unable to find the data related to
10 this particular experiment that they described.
11 It wasn't in this package, as far as I could
12 tell.

13 Q. And that would be important in a quantitative
14 aspect?

15 A. It is absolutely important in a quantitative
16 assay, but it's -- the reason it's important
17 qualitatively is because when you say not
18 detected, it's not detected at what level. Is it
19 not detected at a very, very concentrated level,
20 or is it not detected at a very, very weak level?

21 If I have my glass of water here and I
22 drop in two drop -- two crystals of sugar, there
23 is sugar in my water. But I may or may not be
24 able to detect it. If I run it by some
25 techniques, I may say not detected. It doesn't

1 mean it's not there, it just means I can't detect
2 it.

3 (Court reporter asked the witness to slow down.)

4 A. I'm sorry. If I run it by a method with a very
5 high detection limit, I won't be able to detect
6 -- find the sugar. It doesn't mean it's not
7 there; it just means that I can't find it. If I
8 put a lot of sugar in there, that method might be
9 able to detect it. And I would say, yes, I saw
10 sugar in that water. So it really depends on how
11 much sugar is in my water sample, or how much
12 EDTA is in the blood sample.

13 Q. When you looked at the data, did the testing
14 procedures employed by the FBI detect, at the 1
15 microliter level, EDTA in the blood tube of
16 Steven Avery?

17 A. In the 1 microliter sample that they reported, a
18 single instance, yes, they did report a positive
19 for EDTA. The 2 microliter sample, they did not
20 detect EDTA.

21 Q. But, again, that was just looking in the positive
22 ion mode, just --

23 A. Yes, that was the same set, yes.

24 Q. Just the free acid form?

25 A. Yes.

1 Q. Did you look at the negative ion form in the more
2 sensitive testing?

3 A. I believe that by the FBI's own data, they
4 indicate that both methods are comparably
5 sensitive. They report the same detection --
6 instrument detection limit for both. Let me look
7 and see if I can find some negative here. Okay.
8 I'm not sure this is your question, so tell me if
9 I'm off track here.

10 Q. Would it be helpful if I were to put up, on the
11 big screen, the 1 microliter results from the
12 tube of Avery -- tube of Steven Avery's blood?

13 A. I completely concur that that shows the positive
14 detection and identification of EDTA.

15 Q. And what I'm saying, though, ma'am, is that, what
16 you put up during direct exam was just in the
17 positive ion mode. I would like to put it up in
18 the negative ion mode --

19 A. Okay.

20 Q. -- also.

21 A. Okay. Okay.

22 Q. Would that be helpful for you instead of trying
23 to --

24 A. Well --

25 Q. I will directly go to it.

1 A. Okay. Thank you.

2 Q. And could you look -- does this state that these
3 are the test results, in the negative ion mode,
4 for the 1 microliter?

5 A. Yeah. I don't know where that is in my package
6 but, yes, that's what that looks like.

7 Q. Okay. But you did see this and review this?

8 A. Oh, yeah. There's a lot of stuff here.

9 Q. And EDTA is clearly present in the negative ion
10 mode. This is in the acid free, as well as the
11 iron complex, in the tube of Steven Avery's
12 blood, at the 1 microliter level, right?

13 A. The way that the laboratory runs their protocol,
14 their screening and confirmation, and they,
15 essentially, have to have confirmation both ways.
16 They have to have a positive in both techniques.

17 That's why, frankly, once I saw that it
18 was not detected, I didn't spend a lot of time
19 looking at the rest of it, but I will try to find
20 this, if that's okay.

21 Q. Or if we zoomed out more --

22 A. I don't see the analysts call on here, so to see
23 the criteria that they used. Okay. Thank you.
24 That helps.

25 Q. We can set this up anyway you like. We're

1 just -- And look through the files, if you want.
2 If this is helpful, we can move on. Can you work
3 with this?

4 A. That's just fine, yeah.

5 Q. Does this show that EDTA is present in the vial
6 of Steven Avery's blood, at the 1 microliter
7 level?

8 A. No, it doesn't, because there's inconsistent
9 results for that conclusion from the other
10 technique. You know, when you do it practicing
11 analytical chemistry, you don't get to cherry
12 pick which results you want to accept or not when
13 you run a given sample through an instrument.

14 Q. What is it about the data, that is on this form
15 in front of you, that states that EDTA is not in
16 Steven Avery's tube?

17 A. Nothing.

18 Q. Nothing?

19 A. Nothing.

20 Q. Okay. So, I will ask again, at the 1 microliter
21 level, in the negative ion mode, looking at free
22 acid form, as well as iron metal complex form,
23 EDTA is present in the tube of Steven Avery's
24 blood at the 1 microliter level?

25 A. As called here, that is a correct statement.

1 Q. Thank you.

2 A. Sorry.

3 Q. That's fine. Also, do you remember looking at
4 the data at the 2 microliter level?

5 A. Yes.

6 Q. In the negative ion mode?

7 A. No, I don't. I don't remember that. I'll bet
8 you can put it up there for me.

9 Q. I bet I can. Would you like to look at that,
10 too?

11 A. Please.

12 Q. And, again, what I'm going to ask is that whether
13 in the negative ion mode, looking at the free
14 acid form and the metal complex -- iron complex,
15 that EDTA is present at the 2 microliter level?

16 A. It appears that the analyst has called it a no in
17 this case. You know what, I'm sorry, can I get
18 you to zoom in a little more --

19 Q. Sure.

20 A. --right up here.

21 Q. Mm-hmm.

22 A. I'm sorry. Okay. Yeah, it appears that the
23 analyst in this case has -- has called this a no.
24 And if you go back to the kind of left side where
25 he's -- the left side of the page --

1 ATTORNEY BUTING: Zoom out.

2 A. Yeah, be easier if you back up a little. Down
3 lower. There we go. Clearly, in this case --
4 actually, if you go a little bit down, it will be
5 more obvious that there is really nothing showing
6 there.

7 Yeah, in this particular case, on this
8 247 ion, there's an indication that they simply
9 did not detect it. And the analyst in this case
10 is speculating as to whether that possibly may
11 have been a weak injection.

12 Q. Correct. But at the 1 microliter level, in the
13 negative ion mode, which we saw before, EDTA is
14 in the blood tube of Steven Avery?

15 A. Based solely on that data, yes.

16 Q. Now, when you -- And, clearly, whether you are in
17 the positive ion mode or the negative ion mode,
18 EDTA is present in the 5 microliter sample of
19 Steven Avery's blood in the tube, correct?

20 A. I don't recall ever seeing data from a 5
21 microliter sample of Mr. Avery's blood. I only
22 recall seeing one, two, and the actual lead
23 sample.

24 (Court reporter couldn't hear.)

25 A. And the actual sample of Mr. Avery's blood. I

1 recall seeing a 1 and 2 microliter spot sample
2 and what they called the positive control from
3 the Q sample.

4 Q. But this morning or late -- earlier this morning,
5 Mr. Buting put up the Positive Control B.

6 A. Yes.

7 Q. Which you --

8 A. Yes.

9 Q. And you recognize that that's the 5 microliter
10 level -- that's the 5 microliter level from his
11 EDTA tube?

12 A. Oh, I see. I see what you are saying, I think.
13 That particular sample, I have no way of knowing
14 exactly how much sample they used. That --
15 Because the sole identification of that is
16 Positive Control, Q-49.

17 Q. But, ma'am, in their notes -- don't they clearly
18 state, in their handwritten notes, that for the
19 Positive Control B, 5 microliters?

20 A. All these samples have a 5 microliter injection
21 volume. That's just how much of the sample is
22 injected to the instrument, but it's not how much
23 of the blood sample is injected in the instrument
24 in that case. It's how much of the extract
25 volume is injected into the instrument. Those

1 are two completely different things, with
2 completely different concentrations.

3 Q. Are you stating that the Positive Control B, Q-49
4 extract, is not the 5 microliter level of Steven
5 Avery's blood from the tube?

6 A. I -- As I understood it, that was a prepared
7 extract sample so -- and there's -- I will just
8 mention there's -- there are very few words in
9 this document. I can only infer from sample
10 description, sample titles.

11 Q. Would you look at the handwritten notes --

12 A. On the one that's been admitted previously?

13 Q. No, it might be easier if I were to bring you
14 what I have.

15 A. Okay.

16 Q. Instead of -- And I recognize that this -- such a
17 large volume, is difficult for you to go through.
18 We'll put it on the screen and, then, if you feel
19 as though you want to look through your notes to
20 find that section.

21 A. Okay.

22 Q. And do you see where it says Positive Control B,
23 it's probably the third little hash mark down
24 from the notes, Positive Control, 5 microliters?

25 A. Can you zoom in on that, please?

1 Q. Sure.

2 A. Okay.

3 Q. Do you see that?

4 A. Uh-huh.

5 Q. So, when you put up this morning, the positive
6 ion mode for the examination of the analysis, of
7 this positive control, that showed that EDTA was
8 present in the tube of Steven Avery, this was at
9 the 5 microliter level?

10 A. I'm sorry, but that's a misunderstanding. If you
11 continue to read here, it says 5 microliters of
12 blood was pipetted onto a clean cotton swab. So
13 he was not just taking 5 microliters and
14 injecting it into the instrument.

15 He was taking 5 microliters and putting
16 it onto a swab. And, ultimately, then it gets
17 into the instrument. Now, that's analogous to
18 if -- I'm not sure I'm understanding you
19 properly -- but that is just analogous to the
20 sample that I had concerns about, the 2
21 microliter sample. It's directly analogous to
22 that, in terms of it wasn't directly injected
23 into the instrument; it was placed on a swab and
24 then that was extracted.

25 Q. Will you agree that the Positive Control B, Q-49,

1 the tube of Steven Avery's blood --

2 A. Mm-hmm.

3 Q. -- that at -- that in the data that you looked

4 at, at the 5 microliter level, EDTA was present?

5 A. Yes, sir, it was.

6 Q. Okay.

7 A. I'm sorry, I thought that was like very clear.

8 Q. My questions may be inarticulate. I don't know.

9 A. I want to make sure I answer the right one.

10 Q. And you did. Okay.

11 A. Okay.

12 Q. All right. So, now, when you are talking 1

13 microliter, 2 microliters, 5 microliters, it's an

14 awfully small amount.

15 A. It sure is.

16 Q. And I think you said on direct exam that

17 sometimes, you know, you get down and there can

18 be things that can cause -- when you are down

19 that low in your detection levels, whether 1 or 2

20 microliter, something can skew one, one way or

21 the other; is that what you said or --

22 A. Well, it's just that, when you are down that low,

23 it's a more complicated analysis. And there is

24 more variability, if you will, in the results.

25 If the sample concentration isn't homogeneous,

1 any number of things can cause differences.

2 Q. But the data that we have just put up, as far as
3 the 1 microliter of Steven Avery's blood -- And
4 when we're talking 1 microliter, it's about like
5 1/50th of a drop, correct?

6 A. Right. And it's only a very small fraction of a
7 drop. If you look at this little pipette, it
8 would be obvious how small it is.

9 Q. And that's a very small amount we're dealing
10 with?

11 A. Yes, it sure is.

12 Q. And down to that level, EDTA was detected in the
13 blood of Steven Avery?

14 A. In the one not in the two.

15 Q. Pardon me?

16 A. In the 1 microliter sample, not in the 2
17 microliter sample.

18 Q. But also in the 5 microliter?

19 A. And in the 5, that they call the Positive
20 Control, that's correct.

21 Q. And some artifact, or some interference, or
22 whatever, may have caused the 2 microliter level
23 to -- under their protocol, to not call it?

24 A. Sure. And that's -- that's why you do detection
25 limit studies, because detecting it sometimes and

1 not detecting it other times, is entirely the
2 kind of thing you expect if you are operating at
3 the detection limit.

4 Q. It's not unusual?

5 A. That's not unusual.

6 Q. And even at the 2 microliter level, the presence
7 of EDTA was indicated, but wasn't called, maybe
8 because the ratio with one of the other ions was
9 out of place, that's all?

10 A. Well, you know, in analytical chemistry, close
11 doesn't count. You either call it or you don't.

12 Q. Correct, and they didn't call it?

13 A. That's correct, they did not.

14 Q. But still, when you looked at the data, at the 2
15 microliter level, the presence of EDTA still was
16 indicated?

17 A. That's correct.

18 Q. Okay. Now, maybe we don't even have to go
19 through the graphs. When you looked at the
20 extract, Q-46, which was -- under Q-46, do you
21 know which one I'm talking about?

22 A. Mm-hmm.

23 Q. When you looked at the data in the positive ion
24 mode and the negative ion mode, correct?

25 A. Okay.

1 Q. No EDTA was detected?

2 A. I will look just to make sure, but that's my
3 recollection.

4 Q. Okay.

5 A. That's correct.

6 Q. And in -- And that Q-46, as you know, is a
7 bloodstain from the dashboard of the RAV4?

8 A. That's correct.

9 Q. And on Q-47 extract, which was the bloodstain
10 from the rear passenger door of the RAV4?

11 A. Yes.

12 Q. No EDTA was detected?

13 A. That's correct.

14 Q. And on Q-48, which was a bloodstain from the CD
15 case that was in Teresa Halbach's RAV4, in the
16 positive ion mode, as well as in the negative ion
17 mode, no EDTA was detected?

18 A. Correct.

19 Q. I'm going to show you a picture of the swabs.
20 Have you seen the photographs of the swabs that
21 were --

22 A. Xerox copies, I haven't seen the photographs
23 themselves.

24 Q. Would those be helpful, to see the photographs of
25 them?

1 A. I can.

2 Q. Okay. I want to show you, this was a -- where --

3 this would be Q-46. This would be where the swab

4 was taken from by the Crime Lab analyst.

5 A. Mm-hmm.

6 Q. And I would like to show you, now, a photograph

7 of the swab, Q-46, that was sent to the FBI for

8 testing in this case. Now, again, we're dealing

9 with 1 microliter, which is, I think we agreed,

10 1/50th of a drop.

11 A. Okay. Here's the problem, we don't know what

12 volume we're dealing with. After -- You know, we

13 don't know what volume of blood was deposited on

14 the dashboard, if you are referring to this

15 particular -- these photographs?

16 Q. Yes, ma'am. I understand.

17 A. You said -- Okay.

18 Q. What I'm stating is that the detection limit for

19 the FBI protocol was they can detect the presence

20 of EDTA at the 1 microliter level. Isn't that

21 what the study stated?

22 A. It stated that. I don't believe the data support

23 that conclusion.

24 Q. But you just stated that there was no EDTA

25 present in the extract, Q-46, from the dashboard?

1 A. True, but you can't run a detection limit study
2 on unknown samples. That's an unknown sample.
3 We don't know whether EDTA is present in that
4 sample or not. You can only run detection on a
5 set of unknowns.

6 Q. And there was no EDTA detected on the rear door
7 of Q-47?

8 A. That's correct.

9 Q. And there was no EDTA detected on the stain from
10 the CD case in Teresa Halbach's car?

11 A. That's correct.

12 Q. Yet, in the blood tube of Steven Avery, clearly,
13 in the 1 microliter level, in the positive mode
14 and negative ion mode, testing for free acid EDTA
15 and metal iron complex EDTA, it was present?

16 A. It was present and confirmed in the 1 microliter
17 sample.

18 Q. Thank you.

19 ATTORNEY GAHN: Thank you, so much. That's
20 all I have, ma'am.

21 THE COURT: Any redirect, Mr. Buting?

22 ATTORNEY BUTING: Yes.

23 **REDIRECT EXAMINATION**

24 BY ATTORNEY BUTING:

25 Q. Let's just -- Let's pick up right there for a

1 moment. Mr. Gahn was limiting, very carefully,
2 his question to the 1 microliter level. But as
3 we have shown and discussed here, both direct and
4 cross, the data that the FBI -- the only data
5 they generated shows different results when you
6 test an even larger stain at 2 microliter, in the
7 positive mode, right?

8 A. That's correct.

9 Q. To an analytical chemist, what does it mean,
10 then, when you get what appears to the layperson
11 to be inconsistent results?

12 A. I can certainly see how it seems inconsistent,
13 but just based on my experience with detection
14 limit studies, is that that's not an unexpected
15 result if you are trying to analyze samples that
16 are at or near the detection limit. The fact
17 that sometimes you will see them and sometimes
18 you won't, even at slightly higher
19 concentrations, is not an unexpected result.

20 Q. But does it allow you to draw the conclusion that
21 Mr. LeBeau did in his report that, therefore,
22 this protocol is detectable, or shows that EDTA
23 can be detectable as low as 1 microliter?

24 A. I believe that's not supported by the data.

25 Q. Let me go back to the beginning of Mr. Gahn's

1 questioning for a minute, because I want to make
2 sure that it's clear to the jury, he asked for
3 your opinion about whether or not this protocol
4 was sufficient to test for the presence of EDTA,
5 correct?

6 A. Correct.

7 Q. And you agreed that it is?

8 A. It is. If it detects EDTA, it's a reasonable
9 conclusion that it is present.

10 Q. Okay. Is the protocol also, however, adequate,
11 or not adequate, to establish the absence of
12 EDTA?

13 A. It is insufficient to establish the absence of
14 EDTA at or near its detection limit.

15 Q. All right. So you can use this protocol in one
16 way, but you can also incorrectly use it in
17 another way?

18 A. Yes.

19 Q. And in this -- Dr. LeBeau's attempt to use this
20 protocol, to exclude the presence of EDTA in the
21 bloodstains; is that a correct or incorrect way
22 of using this protocol?

23 A. I believe that's incorrect.

24 Q. The questions about the expiration date, for a
25 moment, on the tube, you indicated the

1 manufacturer's expiration date is for the whole
2 package?

3 A. That's correct.

4 Q. Part of which is EDTA, right?

5 A. Yup.

6 Q. And the -- As far as the stability of EDTA and
7 its -- how long it lasts without beginning to
8 degrade, does the FBI's own protocol establish
9 only a six month limit for a known reagent
10 quantity EDTA solution that they prepared?

11 A. That's correct.

12 Q. And in so doing, does that limit, in their
13 protocol, express a -- I guess an opinion about
14 the stability of EDTA in that solution?

15 ATTORNEY GAHN: Objection, your Honor,
16 foundation for that question.

17 THE COURT: Sustained.

18 Q. (By Attorney Buting)~ Is the fact that the FBI
19 themselves, when they make up a -- mix up a
20 solution of EDTA, in their protocol, the fact
21 that they limit its use to only -- or
22 approximately six months, is that an indication
23 then of -- is that a shelf life?

24 A. That is, effectively, a shelf life.

25 Q. And is that -- Similarly, is that similar to the

1 kind of shelf life that manufacturers put on
2 products?

3 A. Yes. You use it after the shelf life at your own
4 risk. It may or may not be what they put into
5 it.

6 Q. Okay. Let me just -- Let me just clear up a
7 little bit the whole idea of detection limit.
8 When you get down to a detection limit for a
9 sample, does that mean that at that limit you are
10 100 percent of the time able to find what you
11 expect to find?

12 A. No, it does not. It means that 50 percent of the
13 time you will be able to see it and the rest of
14 the time you won't.

15 Q. Really? So it's an equilibrium sort of, I mean,
16 a null, or what would you call that?

17 A. I wouldn't really call it equilibrium because
18 that means something pretty different. But
19 it's -- it's like you are trying to see whether
20 or not there is one spike growing out of a field
21 of grass. There is a lot of variability, and you
22 are trying to see if one of them is big enough
23 than the rest -- bigger than the rest of them,
24 enough that you can detect it.

25 Q. And what you are saying is when someone -- when a

1 chemist establishes a limit, a lower limit of
2 detectability, whatever that level is that's
3 found, even there, 50 percent of the time the
4 substance may be present and not detected?

5 A. At that concentration, yes.

6 Q. And the other 50 percent of the time it would be
7 detected?

8 A. Yes. When you get about an order of magnitude
9 above a detection limit, that's the point where
10 you can start to quantitate. You have to be
11 higher than detection limit to be able to
12 quantitate.

13 At a detection limit, you can only tell
14 you whether or not it's there. You can't tell
15 how much is there. In order to be able to tell
16 how much is there, to actually get a quantitative
17 analysis, you have to be substantially above the
18 detection limit -- the instrument detection
19 limit.

20 Q. And you mentioned, early on in the direct, about
21 some experience that you had and -- with the
22 Navy, trying to examine the limits of detection
23 that a particular protocol actually is designed
24 to do, right?

25 A. Mm-hmm.

1 Q. You have to say yes or no, I'm sorry.

2 A. Yes, sorry.

3 Q. And in that instance you -- I believe you said

4 you found that even though the lab was reporting

5 that this -- to the Navy, that this chemical in

6 the bay was not present, by reviewing the same

7 kind of data you are seeing now, you were able to

8 determine that that was a worthless opinion

9 because the level was simply too high?

10 A. Yeah. It was meaningless in that particular

11 application. It's not -- It wasn't exactly the

12 same kind of data. It wasn't LC/MS data, it was

13 actually a different instrumental technique.

14 Q. Okay. I don't want to confuse things then. So,

15 finally, then, when Mr. Gahn asked you, based on

16 this test and this data, whether or not EDTA was

17 detected in Q-47 -- Q-46, Q-47 and Q-48, does

18 that mean that none of those samples have EDTA in

19 them?

20 A. Not necessarily.

21 Q. Because of what you talked to us before about

22 detection limit?

23 A. Yes.

24 Q. So, can you conclude then, that any of the RAV4

25 -- 3 RAV4 stains that were examined by the FBI

1 could not have come from the blood tube that
2 contained Mr. Avery's blood?

3 A. I can't conclude that.

4 Q. Based upon the data that's presented there,
5 generated from the FBI's own tests?

6 A. Right.

7 ATTORNEY BUTING: Thank you.

8 THE COURT: Anything else, Mr. Gahn?

9 ATTORNEY GAHN: Just a few follow-up
10 questions.

11 **RECROSS-EXAMINATION**

12 BY ATTORNEY GAHN:

13 Q. Again, back to this tube, and the vacutainer
14 tube, and the expiration date.

15 A. Okay.

16 Q. You are not stating that, in March of 1999, EDTA
17 broke down and was not present in that vial?

18 A. No. In March of '96, when it hit its expiration
19 date, it doesn't suddenly go bad on April Fool's
20 Day. Just like milk doesn't suddenly go bad on
21 its expiration date. But that's as far as the
22 manufacturer can certify to its acceptability.

23 Q. But doesn't that expiration date really have to
24 do with the vacuum and they can't guarantee that
25 the vacuum of bringing the blood from the vein

1 into the tube is going to operate?

2 A. That's a serious limiting factor for those tubes,
3 yes, absolutely.

4 Q. And that's what they are stating by that
5 expiration date, correct?

6 A. You know, it sounds subtle, but really it is the
7 system for its intended use. If you go back and
8 you look in the manufacturer's specs for these
9 things, that's the way they describe them. They
10 always talk about intended use.

11 Q. But probably most noteworthy in this case is that
12 the blood is still in its liquid form 11 years
13 later?

14 A. It is.

15 Q. And that means that the anticoagulant is working
16 very efficiently?

17 A. That's correct.

18 Q. And that's due to the EDTA in the tube?

19 A. That's correct.

20 ATTORNEY GAHN: Thank you, ma'am. that's
21 all I have.

22 THE WITNESS: Thank you.

23 ATTORNEY BUTING: A real couple quick
24 follow-ups.

25 **FURTHER REDIRECT EXAMINATION**

1 BY ATTORNEY BUTING:

2 Q. If the tube, Q-49, that Mr. Avery has, says it's
3 got EDTA in it, on the label, right?

4 A. Yes. Well, it doesn't say it has it, it's
5 implied by the presence of the purple top.

6 Q. Okay. But I haven't brought that actual tube out
7 for you to look at it so, but assuming that it
8 does, then it would not be terribly surprising
9 that some level of EDTA would be detected in that
10 still liquid form, right?

11 A. I would have expected that, yes.

12 Q. Okay. But the real question that is of interest
13 here is the stains in the car of the vehicle,
14 right?

15 A. That's correct.

16 Q. And that's what you are saying Mr. --
17 Dr. LeBeau's report cannot rule out?

18 A. Exactly.

19 Q. Thank you.

20 THE COURT: All right. Members of the
21 jury, at this time we're going to take our lunch
22 break. I will remind you, again, not to discuss the
23 case in any fashion, during the lunch break. We'll
24 resume about 1:00.

25 (Jury not present.)

1 THE COURT: You may be seated. Will the --
2 You may be seated. Will the defense be ready to go
3 at 1:00 --

4 ATTORNEY BUTING: Yes, we will.

5 THE COURT: -- with the next witness?

6 ATTORNEY BUTING: Yes, we will.

7 THE COURT: Very we'll. We'll see you
8 then.

9 (Recess taken.)

10 THE COURT: Mr. Strang, at this time the
11 defense may call its next witness.

12 ATTORNEY STRANG: Thank you, your Honor.
13 And, actually, before I do that, and while I'm
14 thinking of it, I would move into evidence Exhibits
15 499 and 500, which relate to Ms Arvizu.

16 THE COURT: Any objection?

17 ATTORNEY GAHN: No objection.

18 THE COURT: Very well, those two exhibits
19 are admitted.

20 ATTORNEY STRANG: And then the next witness
21 is Dr. Scott Fairgrieve.

22 THE CLERK: Please remain standing and
23 raise your right hand.

24 **DR. SCOTT FAIRGRIEVE**, called as a
25 witness herein, having been first duly sworn, was

1 examined and testified as follows:

2 THE CLERK: Please be seated.

3 THE WITNESS: Thank you.

4 THE CLERK: Please state your name and
5 spell your last name for the record.

6 THE WITNESS: Yes, my name is Dr. Scott
7 Fairgrieve, F-a-i-r-g-r-i-e-v-e.

8 **DIRECT EXAMINATION**

9 BY ATTORNEY STRANG:

10 Q. Are we good on volume? Maybe just pull the mike
11 down just a little bit?

12 A. Is that better?

13 Q. Yes. Probably so, yes. Good afternoon. I
14 wonder if we could start, Dr. Fairgrieve, with
15 explaining to our jury why it is that we brought
16 you down from Laurentian University in Ontario,
17 Canada.

18 A. I was requested by the defense counsel in this
19 particular case to review the reports and
20 circumstances surrounding the investigation of
21 the Avery property and, specifically, with
22 respect to cremated remains in this case and the
23 forensic anthropologist report.

24 Q. And how -- how, in general, are you employed?

25 A. I am currently employed as the chair of the

1 Department of Forensic Science at Laurentian
2 University in Sudbury, Ontario, Canada. And I am
3 also a forensic anthropology consultant to the
4 Office of the Chief Coroner for Ontario.

5 Q. Okay. Let me show you your curriculum vitae,
6 which I have marked -- had marked as Exhibit 501.
7 And we'll give the people a little bit of an
8 overview of who you are without -- I promise you
9 -- and without going through all 18 pages of
10 this.

11 A. Okay.

12 Q. You have a bachelor's degree?

13 A. Yes, I have a bachelor of science in biological
14 anthropology from the University of Toronto.

15 Q. Where did you take your education after that?

16 A. I then proceeded on to do my master's level
17 degree at Cambridge University in England, also
18 in biological anthropology.

19 Q. What is biological anthropology?

20 A. It's the examination, and my specific speciality,
21 of the human skeleton. We also refer to it as
22 human osteology. And I'm an expert -- or
23 received education in the area of the analysis of
24 the skeleton in a variety of contexts, both
25 archaeological and modern.

1 Q. Did you attain, what is it, a master's in
2 philosophy in biological anthropology from
3 Cambridge University?

4 A. That's correct. It's referred to as an M.Phil.
5 Degree.

6 Q. All right. You come back from Great Britain,
7 obviously, at some point, back to Canada, and
8 where do you -- where do you go with your
9 education from there?

10 A. From there, I attended the University of Toronto
11 for my doctoral degree, a Ph.D. in human skeletal
12 biology within the Anthropology Department.

13 Q. When did you obtain the Ph.D.?

14 A. In 1993.

15 Q. What have you done in general, big picture, what
16 have you done with your professional life since
17 you completed the doctorate?

18 A. In general, I have, obviously, as a forensic
19 scientist, I belong to several associations, but
20 in my actual work, I am employed, since 1991, at
21 Laurentian University as a forensic
22 anthropologist and have undertaken teaching
23 courses at the undergraduate level.

24 Q. Where is Laurentian University, specifically?

25 A. It's about -- It's in the town of Sudbury,

1 Ontario, which is a very well-known mining
2 community. It is located approximately four hour
3 drive north of Toronto.

4 Q. What -- Give us a run down, if you would, on a
5 little bit more about the faculty position you
6 hold as Chair of the Department of Forensic
7 Sciences at Laurentian?

8 A. Well, I oversee the operation and administration
9 of the department; however, I'm also a teacher,
10 if you like, a university professor. So I
11 instruct students in various different courses,
12 including forensic biology, introducing --
13 introduction of forensic science, forensic
14 anatomy of the human skeleton, as well as
15 forensic analysis of the human skeleton.

16 Q. Outside of an undergraduate or graduate student
17 classroom, do you do any training or teaching of
18 law enforcement?

19 A. Yes, I have. I have -- actually, was invited,
20 back in, I believe it was 2002, to form the very
21 first course in recovery of human remains from
22 crime scenes, for police officers; what we refer
23 to in Canada as forensic identification officers,
24 here they would be crime scene technicians, and
25 that went until 2005.

1 Q. Do you -- Are you involved in research as well as
2 the practical work you described?

3 A. Yes, sir. I am very active in research.

4 Q. What is your primary area of research interest?

5 A. My primary area is in the study and
6 interpretation of cremated human remains. So any
7 human tissues that are subjected to fire in a
8 variety of circumstances, but more commonly in
9 the forensic circumstances.

10 Q. Have you written anything about this?

11 A. I am published in the area of forensic cremains
12 through journal articles as well as book chapters
13 and conference presentations. And I have an
14 upcoming book coming out through a publisher in
15 the U.S. on the forensic cremation analysis and
16 interpretation.

17 Q. And we can look for that at amazon.com soon?

18 A. I'm hopeful.

19 Q. All right. Now, again, the jurors, I think, will
20 probably have your resumé, so I don't want to go
21 through everything, but give me a sense, give the
22 jury a sense of the professional associations to
23 which you gravitated or that you found, you know,
24 to enrich your work?

25 A. Professional associations are very important to a

1 scientist, in growth for both peer review of your
2 own work, but also further training and,
3 basically, communicating with other members of
4 your field.

5 I'm known as a fellow in the American
6 Academy of Forensic Sciences within the Physical
7 Anthropology Section. I'm a member of the
8 American College of Forensic Examiners
9 International and I'm also on the Editorial
10 Advisory Board for their publication known as the
11 Forensic Examiner.

12 Q. Actually, I'm going to stop you right there.

13 A. Yes.

14 Q. We have heard talk about peer reviewing articles;
15 is that exactly what somebody on the Editorial
16 Advisory Board does?

17 A. Well, in my case, from the editor of a specific
18 journal, I would receive the actual article in
19 question and they ask me to examine it for the
20 science behind the article, in order to make sure
21 that the procedures followed, and the way that
22 the article is written, conforms to scientific
23 standards.

24 Q. You are describing peer review, is that what peer
25 review is?

1 A. That's exactly what it is, literally a review by
2 your colleagues.

3 Q. Okay. Are any of the professional associations
4 to which you belong tilted towards law
5 enforcement or defense in the criminal justice
6 system?

7 A. Forensic science, as we deal with it, is meant to
8 be an unbiased profession. We are to undertake
9 analysis of evidence and present our findings of
10 that evidence in courts of law via either
11 reports, or through reports and testimony, such
12 as here.

13 Q. Have you testified in court before today?

14 A. Never in American court; however, in Canadian
15 courts, yes.

16 Q. And I'm -- I'm -- I'm actually curious, who --
17 who has called you as a witness in the past,
18 which side?

19 A. I have only testified for the Crown in Canada,
20 which is -- the equivalent here would be
21 prosecution, so the State.

22 Q. Okay. This is the first time both in an American
23 court and being called by the defense?

24 A. That's correct.

25 Q. Okay. And I want to get now into the more -- the

1 more practical or field work that you do. And
2 I'm curious, is there a tie between the research
3 interest in cremated human remains, or cremains,
4 and the practical field work that you do?

5 A. Yes. Well, my interest in cremains came out of
6 the fact that I was being called in order to, not
7 only recover in the field, cremated remains, from
8 crime scenes, but also to interpret those
9 remains. And so my research has very much
10 centered on the problems and the challenges that
11 one encounters with remains that are in such a
12 degraded state.

13 Q. Do you find yourself still called to consult at
14 crime scenes?

15 A. Yes, I am. I'm currently a consultant for the
16 Office of Chief Coroner in northern Ontario.

17 Q. Which covers how big an area?

18 A. Approximately western Europe. Land area, very
19 wide, from Sudbury on up through northern
20 Ontario, right up to Hudson Bay.

21 Q. Okay. So just part of the province.

22 A. Yes.

23 Q. But a large land area.

24 A. Yes.

25 Q. And who calls you in to crime scenes?

1 A. The -- Usually the procedure is I'm sometimes
2 contacted by police to tell me that there is a
3 scene that they will suspect they will want me to
4 attend; however, as per our protocol, I am called
5 to the scene and to attend by the Regional
6 Supervising Coroner and so I represent the
7 Regional Coroner as far as --

8 Q. Okay.

9 A. -- activity is concerned.

10 Q. So you may be working shoulder to shoulder with
11 police officers, but you are there under auspices
12 of the coroner -- auspices of the coroner, if I
13 understand?

14 A. That is correct, yes.

15 Q. Okay. When -- when you have a case, you are
16 called to the field, crime scene, or suspected
17 crime scene, and you have got human -- cremated
18 human remains?

19 A. Yes.

20 Q. What's -- What are the tasks for a forensic
21 anthropologist like yourself in that role?

22 A. Well, initially, what we do is, I will certainly
23 meet first with the law enforcement officials who
24 are responsible for the investigation as well as
25 the forensic officers. And we will -- I will get

1 background information from them, prior to even
2 attending the scene.

3 And, then, upon attending the scene we
4 will examine the general area in order to -- how
5 to approach. I usually check to see if there is
6 a path of contamination that has been initiated.
7 And we, essentially, work from the outside of the
8 scene to the inside. So I'm very much there
9 working shoulder to shoulder with the forensic
10 identification officers at the scene and --

11 Q. And --

12 A. -- and offering advice on how to do the recovery.

13 Q. Okay. And that's what we're talking about --

14 A. Yes.

15 Q. -- we're still at a point where we're trying to
16 recover --

17 A. Oh, yes.

18 Q. -- remains --

19 A. Oh, yes.

20 Q. -- when it was at the site?

21 A. And documenting those remains at the scene.

22 Q. Okay. So contamination path and I think you just
23 said you work in --

24 A. Yes.

25 Q. -- from the edges?

1 A. Yeah.

2 Q. What are you trying to do?

3 A. Well, we're first of all trying to preserve the
4 context of the evidence as best as possible, and
5 to do as little contamination as possible to the
6 actual scene. So by having a path of
7 contamination, this is a pathway, if you like,
8 that the police officers will have established
9 saying, well, this is the way we got on to the
10 scene originally, so we're just going to keep
11 walking on this path and not possibly contaminate
12 outside of that pathway.

13 Q. Okay. So, in addition to preservation, then,
14 what would be the next task?

15 A. Well, as with anything, as items are identified
16 and, typically, because we're dealing with
17 cremains, I'm the one to identify, okay, this is
18 a cremain and that's a cremain. I would actually
19 be indicating those and we would flag them, for
20 example; in other words, mark them, without
21 touching them, their location, so that we know
22 where they are.

23 And we start from the outside, as I said
24 before, from the areas of lowest concentration,
25 so that we can clear other areas around the scene

1 and then work into where we suspect the highest
2 concentration of the remains may be.

3 Q. As you are working in, what are you -- what are
4 you doing, if anything, to document what you are
5 finding as you work your way in?

6 A. As -- As I work with the ident officers, we --
7 everything that's found, in order, is given an
8 evidence number. And that is controlled by the
9 forensic ident officers. So I will indicate an
10 item, for example, and -- which is items, that
11 is, within my area of expertise, in this case
12 cremated remains.

13 And they will keep an evidence record
14 log and they will say, what description should we
15 give this. And I may say bone fragment, or
16 something of that ilk, and it would be
17 photographed and the flag would be remaining
18 there and subsequently mapped into place.

19 Q. By the time you are getting around to
20 photographing the things that you found, has
21 anything yet been touched, physically?

22 A. No. Nothing is touched until the photography is
23 done and -- but the mapping may be done a little
24 later, because we leave the flags in place.

25 Q. What goes around comes around, I think this jury

1 has heard about the system of mapping that you
2 have --

3 A. Sure.

4 Q. -- now days. Tell us just a little bit about
5 that?

6 A. Well, there's a few different ways to do it. I
7 mean, one -- one way is to superimpose a sort of
8 grid over the scene, which basically looks like a
9 bunch of squares. And then you approach the
10 scene such that you are taking care of the
11 squares around the scene first, clearing those
12 and then going in towards those areas of higher
13 concentration. And that, generally, is done in
14 order to control the method by which you are
15 processing the scene.

16 There are instances, however, where
17 we'll do a combination of this with an electronic
18 means of documenting a scene. And that's using
19 something known as a Total Station Unit, which is
20 basically a surveyors -- computerized surveyors
21 unit. And that helps us to generate a
22 computerized map of the scene.

23 Q. When I say what goes around comes around, we have
24 heard about the Total Station Unit already in
25 this trial. But you -- you folks are using that

1 as well.

2 A. Oh, yes.

3 Q. And what -- what are you -- what specifically are
4 you mapping with that when you use it?

5 A. We're mapping sometimes individual fragments,
6 perhaps fragments that are clustered together in
7 a tight grouping, in a context. It could be long
8 bones that we would see, or other elements of the
9 skeleton. And those are getting numbered as we
10 go along and their position is being noted. This
11 way we get a distribution.

12 Q. Why note the position of every single fragment
13 that you find?

14 A. Well, documentation, it is required for us, first
15 and foremost, for court purposes, in order to
16 document where everything comes from in its
17 original found location. Secondly, by
18 documenting this, this can tell us all sorts of
19 different things about the circumstances
20 surrounding this find.

21 So what we would look for would be bones
22 that happen to be in their relative position to
23 one another, such as the bones of the lower arm
24 being next to one another, and being close to or
25 joined up with the bones of the upper arm.

1 We're interested in the position of the
2 body, if that can be ascertained. We're
3 interested in whether the remains have been
4 purposely manipulated, moved, redistributed,
5 crushed actively, mixed up or comingled. All
6 those things can be ascertained through proper
7 excavation and recovery technique.

8 Q. So with that background, I guess, let's -- let's
9 get specifically to this case and your role in
10 this case. Are you familiar with a Dr. Leslie
11 Eisenberg?

12 A. Yes, I am.

13 Q. How -- How do you know her, or how have you
14 become familiar with her?

15 A. I have known Leslie for, must be over 10 years
16 now, as colleagues through the American Academy
17 Forensic Science, the Physical Anthropology
18 Section.

19 Q. Have you had a chance to review her report in
20 this case?

21 A. Yes, I have.

22 Q. And some photographs?

23 A. Yes.

24 Q. What -- What can you tell us about the common
25 ground you share with Dr. Eisenberg, the points

1 on which you agree with her work, based on the
2 work you have done here?

3 A. Oh, I agree with many points of Dr. Eisenberg's
4 research or study on, in this case, and her
5 report. I certainly have no reason to question
6 the parts of her analysis that deal with the fact
7 that the remains are representative of a single
8 individual, an individual who is female, as well
9 as a mature individual, that is, not a pubescent
10 if you like, or somebody who is post-pubescent.

11 Q. Do you have any reason to disagree with
12 Dr. Eisenberg's assessment of the rough age
13 range?

14 A. She did note in her report that there was a lack
15 of arthritic changes to the skeleton. And as I
16 recall, to the best of my ability, she was
17 indicating an age, an upper age limit of 30 to 35
18 years. That can be problematic. I agree that
19 there was no lipping, however there are --

20 Q. Stop. Time out. That was a technical word.

21 A. Pardon me, sorry. There were no arthritic
22 changes. And I certainly agree from what the
23 photos were I saw, I certainly didn't see any.
24 However, she's using that as a basis to say 30 to
25 35 and I know of no empirical studies to support

1 that. That would be purely speculation.

2 Q. But -- But you have no reason to doubt it either,
3 I mean, you are not -- I take it you don't --

4 A. Not one way or another.

5 Q. -- (inaudible) over that.

6 A. No. No.

7 Q. What else do you find yourself in agreement with?

8 A. Specifically, her analysis of the trauma to the
9 head, I am certainly in agreement with. She
10 indicated two gunshot wounds and I'm in agreement
11 with that.

12 Q. When you say you are in agreement with two gun
13 shot wounds, as a forensic anthropologist, are
14 you qualified to say, yeah, I look at that defect
15 in a bone and in my professional judgment it's an
16 entrance wound from a bullet?

17 A. What we do is, we describe the actual
18 characteristics of a specific lesion or
19 discontinuity, if you like, an opening. And we
20 look at the various signatures of that. And, in
21 fact, in this case, certainly, they do conform
22 with a high velocity projectile, meaning a
23 bullet.

24 Q. Do you think, as a forensic anthropologist, that
25 you also, though, could take the next step from

1 gunshot wound to assigning a manner of death or a
2 cause of death.

3 A. The problem with that is that with wounds such as
4 this, in my profession, we will tend to report
5 that something such as this is perimortem,
6 literally meaning around the time of death. We
7 cannot prove that that was actually the cause of
8 death. We can't prove that it happened shortly
9 after death, or it was a wound that was shortly
10 before death and the person survived for a few
11 minutes and may have been killed through some
12 other means.

13 Because we are dealing with skeletal
14 remains, I do not have the soft tissue that a
15 pathologist does in order to make some of these
16 other determinations; hence, we usually are stuck
17 with the term perimortem.

18 Q. Okay. And here, in specific, after your review
19 of the occipital bone fragment and the parietal
20 bone fragment --

21 A. Yes.

22 Q. -- and the unnatural opening or defect, you are
23 calling it a lesion --

24 A. Yeah.

25 Q. -- discontinuity, the bullet hole?

1 A. Yeah.

2 Q. Okay.

3 A. Trauma.

4 Q. Are you able to offer an opinion, as a forensic
5 anthropologist, on whether those gunshot wounds
6 occurred after the person was dead or before the
7 person was dead?

8 A. No, I cannot.

9 Q. Why not?

10 A. Well, the problem is that I just don't know what
11 actually did cause the death. I'm a reasonable
12 person in that, yes, I recognize that gunshot
13 wounds to the head are not conducive of long
14 life, however --

15 ATTORNEY FALLON: Your Honor, I'm going to
16 interpose an objection at this point, and it may be
17 cleared up with a few more questions from counsel,
18 but I don't think there's been any foundation for
19 this gentleman to render an opinion, vis-a-vis,
20 cause of death. Such was not rendered by
21 Dr. Eisenberg either, I might add.

22 Q. (By Attorney Strang)~ Well, actually, I think
23 we'll step back. I mean --

24 A. Sure.

25 Q. -- if I wasn't clear about this, I want to be.

1 As a forensic anthropologist, are you
2 professionally qualified to render an opinion on
3 cause of death?

4 A. No.

5 Q. As a forensic anthropologist are you
6 professionally qualified to render an opinion on
7 manner of death?

8 A. No.

9 Q. Okay. And I guess, if I understand you, what you
10 are saying here is, you cannot assign a manner of
11 death within your profession or calling?

12 A. No, we cannot. And, certainly, in my
13 jurisdiction as well, what -- how we proceed is
14 that I will evaluate trauma and then this goes to
15 the forensic pathologist, as well as the coroner
16 or medical examiner, as the case may be, and they
17 make that final determination.

18 Q. Now, as a forensic anthropologist, and one who's
19 got a strong interest in cremated human
20 remains --

21 A. Yes.

22 Q. -- can you offer us an opinion on whether the --
23 a gunshot wound to the head, for example, the two
24 here, were before or after burning of the bones;
25 is that something you can do?

1 A. Yes. Yes, that is something I can do.

2 Q. And do you agree or disagree with Dr. Eisenberg's

3 conclusion that the gunshot wounds here were

4 before burning of the bones?

5 A. Yes, I do agree with that.

6 Q. Okay. But whether the gunshot wounds were before

7 or after the death of the person on that --

8 A. I cannot say.

9 Q. Okay. Within the field of forensic anthropology

10 you cannot say that?

11 A. That's correct.

12 Q. Okay. Any other points of agreement with

13 Dr. Eisenberg's work here?

14 A. I agree that she -- I agree with her opinion that

15 she was not able to determine the ancestry of the

16 individual, or the stature of the individual.

17 Q. Height.

18 A. Yes.

19 Q. Okay. What -- What did the -- You just looked at

20 photographs, not actual bone fragments, correct?

21 A. That's correct.

22 Q. Okay. What did -- What did you see in the

23 condition, the exterior condition of the bone

24 fragments that -- that you saw in photographs?

25 A. Well, certainly subjected to an intense heating

1 event, a fire. The types of fractures that I saw
2 there were very consistent with those caused by
3 heat, so you have what we generally refer to as
4 heat induced fractures. And there's a variety of
5 these.

6 Q. Tell -- Tell us about those, a little bit about
7 heat induced fractures.

8 A. Sure. Heat induced fractures are actually caused
9 during the burning process, to any sort of
10 tissue, specifically bone in this case. Because,
11 when you have a fire, it's actually leaching the
12 water out. So you actually are losing water
13 content. And as a result of that, you get a
14 shrinkage of the bone that's occurring and then
15 you get a fracturing that occurs as well.

16 Q. And does it happen in the heating phase, or in
17 the cooling phase, or just throughout?

18 A. Initially, what happens is, as it's being
19 consumed the bone will heat up, and with anything
20 that does heat up, it expands. It's been found
21 through experimentation that the actual -- a lot
22 of the fracturing does really get undertaken at
23 the cooling stage. So as the bone cools, if
24 you -- particularly if it's been in a fire, let's
25 say like a house fire, or something like that,

1 and fire personnel come along and put water on it
2 to cool it fast, that will actually cause it to
3 fracture even more.

4 However, with fires that are attended by
5 a perpetrator, you do get the fracturing taking
6 place naturally; however, the bone will remain in
7 its same location as where it was put with the
8 rest of the body at the time.

9 Q. We heard -- We heard testimony from Dr. Eisenberg
10 to the effect that the recovery process here of
11 the human bone fragments she described was well
12 done. I'm not quoting her exactly, but she --
13 she offered some testimony to that affect. Is
14 that a view with which you can agree?

15 A. I'm afraid I have to differ with that opinion.

16 Q. Why?

17 A. Well, from the photographs that I received, first
18 of all, the documentation with the photography
19 was fairly poor. It was very difficult to tell
20 anything as far as in situ, or the original
21 location.

22 Q. In situ meaning the original site --

23 A. Yes.

24 Q. -- as found?

25 A. As found, would probably be a better way to put

1 it. So the photography was very poor from that
2 perspective. The accounts that I understand
3 occurred as far as the excavation procedures,
4 there was no systematic approach to the
5 collection of the evidence at first processing,
6 from what I saw. I know there was no grid
7 imposed at that time, during the initial
8 excavation.

9 I was informed that shovels were used in
10 order to do that and it wasn't, shall we say, a
11 more forensic archaeological approach and that,
12 essentially, Dr. Eisenberg received the materials
13 directly from the police services involved,
14 without her having been in the field.

15 Q. Okay. So other than nitpicking, why does this
16 matter. Why does it matter?

17 A. Well, it matters as far as what I mentioned about
18 the documentation and being able to tell things
19 about the circumstances surrounding the burning
20 of the body. One of things the context can tell
21 you, if it's well done, is to approach the
22 question of where the body was burned. Was it
23 moved? Was this the actual location or not?

24 Q. How do you approach drawing a conclusion about
25 where the original burn site, or where the body

1 was burned; how do you approach that through a
2 proper recovery?

3 A. Well, within the recovery and, certainly, in
4 recoveries I have been involved with, what is
5 done is, as you proceed through the careful
6 excavation, removing soil, soil is removed from a
7 particular square, for example, that you have
8 identified as being of interest within your grid.
9 And you proceed, vertically, from the highest
10 point of that square, down to a level until you
11 start finding material.

12 When you find that material, you clear
13 it off very carefully. You actually switch from,
14 shall we say, a trowel type implement, to
15 actually wooden implements, because they have the
16 same approximate density as bone and even
17 cremated bones, so you have less risk of actually
18 causing damage, shall we say, extra damage to the
19 remains.

20 Q. Why is that a concern, by the way, with burnt
21 bone?

22 A. Well, burnt bone is extremely fragile. You -- We
23 tend to have a little axiom that we refer to in
24 teaching cremation studies to students, and that
25 is, if you take a cremated bone and you pick up

1 one bone, you end up putting down 10. What that
2 means is, that it's very fragile and it can,
3 quite often, when moved, unless it's been, shall
4 we say, fixed together in some fashion, using a
5 glue or something of that ilk, you are actually
6 going to pick it up and you are going to cause
7 some damage.

8 Q. Now, is that -- is that breakage, or that
9 fragility, universally true through all the
10 stages of from, you know, light charring to a
11 complete calcination of the bone?

12 A. No, it's -- because a body burns what we call
13 differentially, in other words, it doesn't burn
14 evenly, you actually have some areas of the
15 skeleton that are going to burn, or the body,
16 that will burn more quickly.

17 If you think about it, areas where
18 there's not a lot of skin coverage, such as the
19 ends of fingers, the top of the head, these sorts
20 of areas will burn more quickly. So we'll
21 actually see them go through the various
22 different color changes and stages of the fire
23 process ahead of other areas, such as the torso.
24 More meat on the torso, certainly mine. And
25 that's going to take longer to actually be

1 consumed, as opposed to say the limbs or the head
2 and face and such.

3 Q. So when -- But I'm curious, I mean, does the
4 actual fragility, if you will, of the bone --

5 A. Yes, it's going to vary as a result of that. So
6 the earlier on, where you have the dark
7 blackened, if you like, charring of the bone, is
8 not as fragile as the bone that has gone to sort
9 of a gray-blue stage and approaching what we call
10 a calcined stage.

11 The actual end stage, if you like, the
12 ultimate extreme of burning bone is where we have
13 the white calcined stage. And, in fact, the
14 molecules of the minerals in the bone actually
15 reorient themselves into a structure that is more
16 akin to porcelain, so it actually becomes quite
17 strong at that point.

18 Q. Okay. So it's going through sort of a curve
19 where it's becoming more and more fragile. And
20 at the final stage, you are saying it's
21 actually -- regain --

22 A. It can be.

23 Q. -- some strength.

24 A. It's very much dependent upon the actual density
25 of the bone.

1 Q. Okay. All right. And you were -- you were
2 explaining how this, you know, this sort of
3 layered excavation and identifying pieces in
4 place --

5 A. Yes.

6 Q. -- helps -- helps get you to being able to draw a
7 conclusion about whether the body was burned
8 there, or moved, or, you know, otherwise
9 disturbed, and I want to go back to that.

10 A. Sure. The actual -- When we actually do an
11 excavation like this, and let's say we come
12 across, as I have, I will describe an actual
13 scene I have been involved with, the lower end of
14 the upper arm bone. And upon excavation, by
15 excavating it carefully, one can see the actual
16 lines of the fracture from the heat and see that,
17 yes, this bone is in a location; however, if we
18 move this bone, it is going to fall apart. That
19 tells us that this is the original context of
20 where that was burned, because if we moved it, we
21 would already find it in the smaller pieces.

22 Q. Okay. All right.

23 A. Quite logically, you know, if you have got
24 something that's -- if you -- it's akin to taking
25 a piece of glass and putting it on the floor and

1 stepping on it; well, you can see the outline of
2 the glass and the size of the piece of glass, but
3 you will also see all the cracks. So if you move
4 it, you are not going to be able to see that
5 outline any more in it's original form.

6 Q. Okay. Do you -- Do you agree here with
7 Dr. Eisenberg that it's clear in this case that
8 bones were moved?

9 A. I agree that bones were moved.

10 Q. In the human -- When I say bones, I'm talking
11 about human --

12 A. Human remains.

13 Q. -- human remains.

14 A. Yes.

15 Q. Okay. You -- you -- you do agree with that?

16 A. I do.

17 Q. Okay. And based on the recovery method that was
18 used here, are you able to offer an opinion, to a
19 reasonable degree of scientific certainty, about
20 where these human remains were burned?

21 A. No, I'm not.

22 Q. Why not?

23 A. Well, the fact is, that because I don't have any
24 records from which to examine that would actually
25 indicate to me that there are bones in the

1 original location, where they were burned, I
2 can't offer an opinion on that.

3 Q. You know, when -- if you -- if you go to a site
4 and you have the opportunity to recover a burnt
5 human remains, are you able to identify the, you
6 know, the specific bones by name and location in
7 the body when you are looking at them in place?

8 A. Yes.

9 Q. How is that?

10 A. Well, there are anatomical landmarks on the
11 various different bones. And if they are in
12 their original location where they were burned,
13 we'll even see them on what we call relative
14 anatomical position. So that if you burn remains
15 in a specific location and no other force acts
16 upon them except the actual burning process, then
17 the materials that make up the head will be at
18 the head end of the body and then you will have
19 the neck, the thorax, and then the legs and then
20 the arms off to the side. So that's -- that
21 makes logical sense.

22 Q. How -- How about when these things are fractured,
23 because I get -- I gather from what you said a
24 few minutes ago, some breakage and fracturing
25 will occur just because of the heating and

1 initial contraction as the bone dries?

2 A. Yeah, the heat actually will definitely cause

3 fracturing and you see all sorts of different

4 types of fractures within the bone itself.

5 Q. And -- But you're -- But you're still able, if

6 the bones are in place, to identify the type of

7 bone you are looking at?

8 A. Oh, yes.

9 Q. And that's something a forensic anthropologist

10 can do with training?

11 A. Oh, yes, absolutely.

12 Q. Back to the moving of bones now, when you say you

13 agree that human remains were moved here, are you

14 talking about moved a little bit within one site,

15 or moved from point A to point B, or both?

16 A. Given that there are three locations, from my

17 understanding, where we have bone having been

18 documented to have come from, then we are talking

19 point A to B or to C, as the case may be.

20 Q. Okay. Now, we have been calling these the area

21 behind Steven Avery's garage, or sometimes called

22 it the burn area?

23 A. Yes.

24 Q. The Janda burn barrel, is that --

25 A. Yes.

1 Q. -- the second. And then there's what I call, at
2 least, the quarry pile or quarry site.

3 A. Yes.

4 Q. On that, Dr. Eisenberg testified, as I recall,
5 that she only suspected that she was seeing human
6 bone fragments, maybe two from the pelvis, one
7 from the iliac crest and that there were other
8 bones that she initially suspected to be human,
9 some of which she later determined were animal --

10 A. Yes.

11 Q. -- bone, and some of which remain undetermined,
12 still possibly human and possibly not?

13 A. Yes, that's my understanding.

14 Q. Do you have any reason to disagree with that?

15 A. No, I do not.

16 Q. Okay. So -- But -- But as I understand it, in
17 your opinion, human bone fragments were found in
18 the Janda burn barrel?

19 A. Yes, that's my understanding from the report.

20 Q. And human bone fragments behind Mr. Avery's
21 garage?

22 A. Yes, that's correct.

23 Q. Okay. So, at least those two sites, to a
24 reasonable degree of scientific certainty, in
25 your opinion, you got human bone?

1 A. Yes, I take Dr. Eisenberg at her word.

2 Q. Okay. And, again, I think we touched on this,
3 but do you see any evidence, in your independent
4 review, that we have the remains of more than one
5 person?

6 A. No, it is consistent, from the inventory that she
7 provides in her report, it's consistent with one
8 individual.

9 Q. Are you able to say anything about whether bone
10 fragments in the area behind the garage were or
11 were not moved, disturbed, or the verb was you
12 used, in that general area behind Mr. Avery's
13 garage?

14 A. Based on the recovery techniques, I have no
15 evidence or any documentation to be able to make
16 any determination.

17 Q. Well, can you agree with Dr. Eisenberg's opinion,
18 as I recall it, that probably the area behind
19 Mr. Avery's garage was the original burn site for
20 the bone fragments, wherever found?

21 A. I cannot agree with that at this point.

22 Q. Why not?

23 A. Well, because, firstly, the documentation. The
24 documentation itself did not lend itself to that
25 interpretation, so I can make no inference

1 whatsoever from that.

2 Q. Okay. Well, let's -- let's go to the reasons
3 that Dr. Eisenberg gave in support of her -- her
4 view. She -- she -- she told us that the greater
5 amount -- the greatest amount, by far, of human
6 bone or human remains, was found behind the
7 garage, with much less found in the Janda burn
8 barrel, and still much less, if it was human at
9 all, at the quarry site?

10 A. Yes, that's what I understand.

11 Q. Does that, in your professional opinion, support
12 the view that, therefore, the Avery garage was
13 the most likely burn site?

14 A. No.

15 Q. Why not?

16 A. I have been involved in cases where human
17 cremains have been burned in one location and
18 moved to another location. And in those cases,
19 in fact, the actual location where the bones have
20 been moved to, in other words, their ultimate
21 location of where they have been buried, or
22 placed in another context, tends to be the
23 location where most of the remains are. And in
24 those -- in that instance, for example, I have
25 recovered elements or parts of the skeleton from

1 all areas of the body.

2 Q. Okay. Wait a minute, I want to stop you.

3 A. Sure.

4 Q. Are you saying that in your experience, when --
5 when burnt bones are moved, you tend to find the
6 majority of them away from the place in which
7 they were burned; in other words, find them in
8 the place to which they were moved, not from
9 which they were moved?

10 ATTORNEY FALLON: Objection, leading.

11 ATTORNEY STRANG: I want to make sure I
12 understood your testimony.

13 THE COURT: I'm going to allow it.

14 A. I understand that, from your question, the answer
15 is, yes, in the cases I have dealt with where
16 human cremains have been moved, the majority of
17 them have been from the body and making up the
18 largest portion of the body, from the ultimate
19 final place where they were actually moved to.

20 Q. When you had those situations, how have you been
21 able to determine that?

22 A. As far as the numbers, or --

23 Q. No, the -- you know, that the bones were moved to
24 this place.

25 A. Well, we have found small fragments in some in

1 situ, or shall we say the original location of
2 the burn, determined by the excavation techniques
3 I have told you about where items have been
4 missed. And then other -- all the other items
5 have been taken and moved.

6 Q. Well, and this brings me back to Dr. Eisenberg,
7 because it's -- as I recall, the second point she
8 made in support of the conclusion that the area
9 behind the garage was the probable burn site, is
10 that that's where she found the smaller, more
11 delicate bones, facial bones, dental structures,
12 that kind of thing. Does finding the smaller and
13 more delicate bone fragments support the
14 conclusion, in your experience, that this must be
15 the place where the original burn occurred?

16 A. No, it does not.

17 Q. Why not?

18 A. Well, we have actually been able to recover
19 fragmentary teeth, facial bones, very small bones
20 from the body, including even we found bones from
21 the middle ear, which are about a millimeter in
22 size, in one of these locations where the bones
23 have been moved to.

24 Q. In other words, they have survived -- some of
25 these small bones have survived moving?

1 A. Yes, they have.

2 Q. And then identifiable in another place?

3 A. Yes, that's correct.

4 Q. Say the bones in the middle ear?

5 A. Yes.

6 Q. How many of these bones are there?

7 A. Three in each middle ear.

8 Q. One millimeter each?

9 A. Approximately, yeah.

10 Q. Okay. Well, and I think the third thing, as I

11 recall Dr. Eisenberg's testimony, which she cited

12 in support of her opinion, that the area behind

13 the garage was the probable burn site, is that it

14 looked like there had been only one burn event;

15 you know, that there had been only one fire. Do

16 you follow what I'm saying, everything had been

17 burned in one place?

18 A. Yes.

19 Q. Does that support the opinion that the Avery

20 garage was the probable site?

21 A. Not necessarily, as a result -- one cannot tell

22 how many burns actually took place in that

23 location. From my own experience, I have

24 actually dealt with cremation cases where

25 somebody has actually used a traditional burn

1 area in there own yard for the location of a burn
2 itself. So if there's a fire pit that's at hand,
3 then that's where it's been.

4 Q. Well, but I guess I'm talking about cases in
5 which we're agreed that bones have been moved --

6 A. Yes.

7 Q. -- after burning.

8 A. Yes, that is, in fact, the case, yes. We do have
9 instances where there can be even re-burning
10 going on and certainly burns going on before
11 that. So you can't tell how many burn events
12 took place, that's the bottom line.

13 Q. Okay. Can you -- Can you give us an opinion
14 about where the original burn site was for the
15 human remains, eventually given to Dr. Eisenberg?

16 A. No, I cannot, not from the evidence that I have
17 reviewed.

18 Q. Is -- Is -- Can you rule out the area behind the
19 Avery garage?

20 A. The way I would phrase it is, I fail to exclude
21 it.

22 Q. So, in other words, it's a possible place?

23 A. Certainly.

24 Q. Okay.

25 A. Certainly.

1 Q. Based on the information you have, were there
2 other possible burn sites, let's say, on the
3 larger Avery property?

4 A. Oh, certainly, yes.

5 Q. Such as?

6 A. The barrel for one; I -- I can't rule that out.
7 My understanding, from the scene of the actual
8 overall property, that there is a wood type of
9 furnace, I understand, on the property. And
10 there's even, as I recall, an aluminum smelter on
11 the property.

12 Q. Okay. Now, you personally haven't looked at any
13 of these?

14 A. I have not examined any of these. I have never
15 been to the Avery property.

16 Q. All right. Yet alone in November of 2005?

17 A. Not at all.

18 Q. Okay. And what -- what can you say about other
19 unknown possible burn sites here?

20 A. Well, I can't exclude any other location as being
21 impossible, because simply I have no evidence to
22 that affect.

23 Q. Well, let's -- let's go back --

24 ATTORNEY FALLON: Your Honor, may counsel
25 and I approach the bench?

1 THE COURT: Sure.

2 (Side bar taken.)

3 THE COURT: Members of the jury, we're
4 going to take a short break at this time. I remind
5 you not to discuss the case during the break. You
6 are excused at this time.

7 (Jury not present.)

8 THE COURT: And, Dr. Fairgrieve, I will
9 have you step out in the hallway at this time.

10 THE WITNESS: Okay. Thank you.

11 THE COURT: Please be seated. I will
12 indicate for the record that Attorney Fallon asked
13 for a side bar and raised an issue which I suggested
14 be raised on the record, outside the presence of the
15 jury. At this time the jury has been excused and
16 the witness is also excused from the courtroom.
17 Mr. Fallon.

18 ATTORNEY FALLON: Yes, thank you, Judge. I
19 just wanted to express concern, I don't know where
20 counsel is going with the rest of this examination
21 on this point. But from my review of the amended
22 disclosure of expert witness, Scott Fairgrieve, the
23 amended disclosure states, at the bottom of page
24 four, most notably the first full sentence on page
25 five, that there would be an opinion expressed that

1 there is no evidence that these cremains were
2 originally burned in the barrel where they were
3 found.

4 So the testimony, as elicited by Dr.
5 Fairgrieve, it's not the opinion that we were led
6 to believe would be he expressed. And, again,
7 this was one of the reasons we filed our demand
8 for a disclosure -- full disclosure in a report,
9 for fear that such an opinion like this would be
10 expressed, without notice to the State.

11 THE COURT: Mr. Strang.

12 ATTORNEY STRANG: Yes, and I understand the
13 confusion, which I probably created in the summary
14 here, or maybe here, although I don't think he's
15 offered any opinion that bones were burned in the
16 burn barrel. What this is meant to say and what I
17 will assure counsel and the Court, is that
18 Dr. Fairgrieve is -- is -- I expect him to say that,
19 I have no evidence that allows me to conclude where
20 these bones were burned. I can't -- I can't say
21 they were burned in the burn barrel. I can't say
22 they were burned behind the garage. I can't say
23 they were burned anywhere else. In other words, I
24 can't assign a place, nor can I necessarily rule out
25 possible burn sites.

1 So I do understand the concern, because
2 the specific sentence says, there is no evidence
3 that these cremains were originally burned in the
4 barrel where they were found. And that is his
5 opinion, in the sense that, I can't say they were
6 burned there, I don't have evidence that the body
7 was burned in the barrel. What I expect him to
8 say is, I -- I can't rule out, or I -- I fail to
9 exclude any possible burn site, we'll just never
10 know, is the bottom line.

11 ATTORNEY FALLON: That's an entirely --
12 That's an entirely different -- well, not entirely
13 different, but it's clearly a different opinion. He
14 is saying here, they were not burned in the burn
15 barrel. That's what we expected him to say. Now
16 he's saying, I can't rule it out.

17 ATTORNEY STRANG: It doesn't -- it doesn't
18 say that. I mean, I understand the confusion and
19 I --

20 THE COURT: Well, there is a difference
21 between saying I can't rule out the burn barrel and
22 saying there's no evidence to suggest that they were
23 burned in the burn barrel. Perhaps that's something
24 the State can bring up on cross-examination. Did
25 the -- did the report come from the doctor or --

1 ATTORNEY FALLON: No, it's from counsel,
2 there is no report, that's our problem.

3 ATTORNEY STRANG: This is the disclosure
4 that we filed of potential expert witnesses, is the
5 overall -- the broader opinion here is that he may
6 agree with, challenge, or differ with any of the
7 opinions offered by the State's expert forensic
8 anthropologist and, more particularly, I'm quoting
9 from page three of the disclosure, Dr. Fairgrieve
10 may testify that while it is possible that the
11 cremains found were originally burned in the pit
12 behind Steven Avery's garage, in his opinion it was
13 also possible that they were burned in another
14 location.

15 He goes on to mention the smelter and
16 the wood furnace and in his opinion it is
17 possible that the cremains were rendered at
18 either of those locations or another undetermined
19 location. And that is the intended scope of the
20 testimony.

21 THE COURT: Well, taking what you just
22 read, together with what Mr. Fallon just read, I
23 would interpret that to mean they could have been
24 burned in another location besides behind the
25 garage. They could have been burned in the smelter

1 or whatever the other reference was, but I would
2 have interpreted it as excluding the burn barrel.

3 ATTORNEY STRANG: No, he won't say that.
4 He's saying, I can't exclude it, but neither do I
5 have any evidence that they were burned in the burn
6 barrel.

7 ATTORNEY FALLON: Well, I guess I disagree.
8 I think the opinion should be excluded. The
9 language that he read is helpful on the one hand,
10 but not helpful on the other; in so far as we fully
11 expected Dr. Fairgrieve to refute some, none, or all
12 of the opinions expressed in Dr. Eisenberg's report.
13 That's certainly fair game and I don't have a
14 problem with that. But then to try to say he may
15 offer some other opinions about some other stuff, to
16 which we're not privy yet, that creates the whole
17 problem of not having a report in the first place
18 from which to base a cross-examination upon.

19 So I understand counsel's point, but I
20 don't know how you get around the fact that he's
21 saying, it wasn't in the burn barrel, so that
22 leaves us the burn pit, the smelter, the boiler,
23 or some other place, God knows where. But it
24 certainly doesn't include the barrel.

25 ATTORNEY STRANG: No, what he's saying is,

1 I have no evidence that they were burned in the
2 barrel. I can't rule it out, but I have no evidence
3 that it happened.

4 THE COURT: All right.

5 ATTORNEY STRANG: And it might be helpful
6 to -- if we could go back with the court reporter
7 and find out just exactly where we were when we
8 stopped.

9 THE COURT: Before we do that, I'm going to
10 rule as follows: I believe that the information was
11 slightly misleading, but not so much so that I'm
12 going to grant a remedy to prevent this witness from
13 giving the testimony he did; that is, there is not a
14 significant difference between saying there's no
15 evidence to suggest it was burned in the barrel and
16 based on the evidence available, essentially, I have
17 no idea where it was burned.

18 I understand what you are saying
19 Mr. Fallon, I think there is somewhat of a
20 difference, but I'm going to rule that it's not
21 enough of a difference to impose a sanction on
22 the defense.

23 ATTORNEY FALLON: Very well. Thank you.

24 ATTORNEY STRANG: And I do want to go back
25 so that I -- I really can try to steer away from any

1 problem I created.

2 THE COURT: All right. Let's go off the
3 record for a couple of minutes before we bring the
4 jury back in.

5 (Brief recess.)

6 THE COURT: All right. We'll bring the
7 jury back in at this time.

8 (Jury present.)

9 THE COURT: You may be seated. And,
10 Mr. Strang, you may resume.

11 ATTORNEY STRANG: Thank you.

12 Q. (By Attorney Strang)~ Dr. Fairgrieve, within the
13 field of forensic anthropology and drawing on
14 your experience with cremated human remains, are
15 you able to offer an opinion, to any reasonable
16 degree of scientific certainty, about whether the
17 remains found here were burned in the area behind
18 Mr. Avery's garage?

19 A. No, I'm not.

20 Q. Are you able to offer an opinion, to a reasonable
21 degree of scientific certainty, that the remains
22 here were burned in any other particular
23 location?

24 A. No, I am not.

25 Q. On the evidence you have, to a reasonable degree

1 of scientific certainty, are you able to rule out
2 any possible burn site?

3 A. No, I am not.

4 Q. Are you able to say that, to a reasonable degree
5 of scientific certainty, bone -- human bones here
6 were moved, or remains were moved, after burning?

7 A. Yes.

8 Q. What is your opinion on that?

9 A. Well, the fact that we have burned bones in at
10 least two locations, logically, they have been
11 moved.

12 Q. Are you able to offer an opinion about the means
13 by which those were moved, or the, you know, the
14 mode of transport --

15 A. No, I am not.

16 Q. -- of the bones. Are you able to rule anything
17 out in that respect?

18 A. No, I am not.

19 Q. And in your professional experience, what
20 significance, if any, do you assign to the
21 majority of bone fragment being found behind
22 Mr. Avery's garage?

23 A. Just the fact that the majority of the bones
24 representing the individual are in that position.

25 Q. And in your experience, is that more consistent

1 with being a place that bones were moved to or
2 bones were moved from?

3 A. To.

4 Q. What, if any, significance do you assign to the
5 fact that somewhat larger bone fragments, in
6 general, or on average, may have been found in
7 the Janda burn barrel than on average were found
8 behind the Avery garage?

9 A. I don't really attach any significance to that
10 other than an incomplete movement.

11 Q. Why not?

12 A. Well, the fact that things do get left behind, I
13 don't know the motivation, as far as what's been
14 going on behind the actual movement of these
15 remains, and so why they are in one place and not
16 completely moved to another is beyond my
17 understanding.

18 Q. Okay. And how about size, the relative size of
19 the fragments, does that tell you anything about
20 movement, or where these -- why these things were
21 found where they were found?

22 A. Not specifically, no.

23 Q. Is it sometimes difficult, in the field, at a
24 burn site, to identify cremated human remains, I
25 mean by the -- to the naked eye?

1 A. To the trained eye, we do recognize specific
2 human elements, and it is possible, but it always
3 depends on what is present at the scene.

4 Q. And I'm not sure, I want to chase that just a
5 little bit. I mean, with burnt remains, is it
6 always obvious to the untrained eye what one is
7 looking at?

8 A. No.

9 Q. Why not?

10 A. Well, it takes -- In order to be able to
11 recognize human cremains, you are going to have
12 to have some fairly advanced training in the
13 anatomy of the human skeleton and what bones look
14 like. And also what, specifically, human bones
15 look like, because people will burn garbage
16 outside and there will be remnants from meals and
17 things like that, and being able to distinguish
18 animal from human, so that does take training.

19 Q. Did you see any differences that struck you, in
20 your experience, as significant, in the range of
21 heat damage to the bones found at either of the
22 two, or possibly three, locations?

23 A. From what I recall, the bones from the pit area,
24 as I recall, seemed to be more calcined, that is,
25 towards the white stage; and I believe there was

1 a higher preponderance of charred remains from
2 the burn barrel.

3 Q. And which -- which, if either, would be more
4 easily identified to the untrained eye as being
5 human bone?

6 A. Oh, the charred remains, the ones that are white
7 charred.

8 Q. More -- More easy by color or appearance than
9 the --

10 A. Form.

11 Q. I'm sorry?

12 A. Due to its form, shape.

13 ATTORNEY STRANG: Thank you. That's all I
14 have.

15 THE WITNESS: Thank you.

16 THE COURT: Mr. Fallon.

17 **CROSS-EXAMINATION**

18 BY ATTORNEY FALLON:

19 Q. Good afternoon, Doctor.

20 A. Good afternoon.

21 Q. Welcome to Wisconsin.

22 A. Thank you.

23 Q. Is this your first trip?

24 A. No, I have been to Wisconsin before.

25 Q. You have. But this is the first time you have

1 been asked to be a witness in a case, I take it.

2 A. That is correct.

3 Q. All right. And this is the first time you have
4 been here with respect to this case?

5 A. Yes, it is.

6 Q. Okay. Now, I take it from your experience and
7 training and your -- more importantly your resumé
8 and your work for the Crown, it looks like you
9 have done a fair amount of forensic work?

10 A. Yes.

11 Q. And I take it you are routinely asked to go to
12 what are suspected crime scenes and assist law
13 enforcement in the processing of those?

14 A. That is correct.

15 Q. All right. And you have been doing that for
16 about 15 years?

17 A. Sixteen.

18 Q. Sixteen years?

19 A. Sixteen, yes.

20 Q. All right. And I take it, in the Province of
21 Ontario, you have provided expert testimony on a
22 number of occasions?

23 A. That is correct.

24 Q. And, frequently, if not almost in all cases, as I
25 understood it, you provided testimony for the

1 Crown or the prosecutor?

2 A. All cases.

3 Q. All right. Okay. For this case, help us out
4 here and tell us what information you had to
5 assist you in expressing the opinions you have
6 expressed this afternoon.

7 A. I received photographic files in the form of CDs.
8 I received reports from -- that were, shall I
9 say, compiled by Dr. Eisenberg.

10 Q. All right.

11 A. I have received a transcript of testimony of
12 Dr. Eisenberg's from, I believe it was a
13 preliminary hearing. And I received background
14 from the defense concerning the circumstances
15 surrounding the case.

16 Q. Background from the defense?

17 A. Yes.

18 Q. All right. We'll get to that in a minute. So
19 that I'm clear, in terms of the documents you had
20 for purposes of expressing the opinion today, you
21 had the preliminary and final report of
22 Dr. Eisenberg?

23 A. Correct.

24 Q. You had a copy of her testimony from the
25 preliminary examination in this case, which is

1 now about 14 months ago, I guess?

2 ATTORNEY STRANG: Let's just take one
3 moment at side bar, counsel, and your Honor, if we
4 may.

5 THE COURT: Members of the jury, I'm going
6 to excuse you for a much shorter period than the
7 short period I just excused you for a few minutes
8 ago. You are excused at this time.

9 (Jury not present.)

10 THE COURT: You may be seated. Mr. Strang.

11 ATTORNEY STRANG: I think probably the best
12 way to spend the time is just to go off the record
13 and counsel can try to work out here where he's
14 going and how we get there without, you know, going
15 into inadmissible material.

16 THE COURT: Go ahead. We'll go off the
17 record for a minute.

18 (Off record discussion.)

19 THE COURT: All right. Counsel, before I
20 bring the jury back, since we did have a side bar, I
21 will leave it to one of the two of you to put
22 something on the record concerning the contact.

23 ATTORNEY STRANG: I interrupted Mr.
24 Fallon's cross-examination to suggest a side bar
25 because, although I thought his questions proper, in

1 the proper area, I recognized that we might be
2 getting into a situation where the witness, quite
3 honestly, would respond by referring to information
4 attributed to Brendan Dassey, or from Brendan
5 Dassey's case, some of which was shared with the
6 witness.

7 I didn't think that's where Mr. Fallon
8 meant to be going and I just didn't want, you
9 know, to have an honest answer to an unintended
10 question and create a problem. So, that was the
11 reason for the side bar and what we discussed
12 briefly at side bar.

13 THE COURT: All right.

14 ATTORNEY FALLON: That's accurate. All I
15 wanted to know was the base of information upon
16 which he was operating. And I'm comfortable with
17 his not mentioning whatever information they
18 obtained from him because it's not germane to the
19 rest of my examination.

20 THE COURT: Very well, we'll bring the
21 jurors back in at this time.

22 (Jury present.)

23 THE COURT: You may be seated. And,
24 Mr. Fallon, you may resume.

25 ATTORNEY FALLON: Thank you.

1 Q. (By Attorney Fallon)~ Doctor, as I understand,
2 when we left off, you were telling us about the
3 information that you had at your disposal to
4 assist you in expressing these opinions this
5 afternoon. So, let me begin by saying and
6 summarizing, you had the two reports from
7 Dr. Eisenberg?

8 A. That's correct.

9 Q. A copy of her transcript from the preliminary
10 examination?

11 A. That is correct.

12 Q. Okay. You had a CD Rom of the -- I would imagine
13 fairly numerous amount of photographs taken just
14 by Dr. Eisenberg, of all the bone fragments she
15 examined?

16 A. Yes.

17 Q. Maybe not all, but quite a sizable amount of them
18 anyway?

19 A. Yes, that's correct.

20 Q. All right. And you also examined a few pages of
21 police reports as I understand it.

22 A. That is correct, yes.

23 Q. Now, the police reports you examined, were they
24 reports authored by an agent from the Division of
25 Criminal Investigation by the name of Tom

1 Sturtivant?

2 A. I believe so.

3 Q. All right. And there were about four pages?

4 A. I don't recall the number of pages.

5 Q. But it would have been about the initial -- the

6 initial discovery -- the reports -- But they were

7 brief reports from the officer regarding the

8 initial discovery?

9 A. I believe so, yes.

10 Q. Okay. Now, any other police reports?

11 A. I can't think of any offhand.

12 Q. All right. Other than the photographs of the

13 bone fragments made by Dr. Eisenberg, did you

14 obtain any other crime scene photographs?

15 A. Yes, I did.

16 Q. Okay. Tell us about the crime scene photographs

17 that you received?

18 A. Various views of the Avery property.

19 Q. Aerial views?

20 A. Aerial views.

21 Q. Okay.

22 A. Landscape views, so down, obviously taken by

23 somebody on the ground, various different angles;

24 exteriors views of dwellings; distant views of

25 the pit behind the garage, general area photos as

1 well.

2 Q. All right. How about any of the photographs
3 obtained prior to the processing of the pit,
4 developed by the Wisconsin State Patrol on Sunday
5 or Monday, that would be November 6th or 7th, the
6 days before the pit was discovered on the 8th?

7 A. I believe there were some, as I recall.

8 Q. Some?

9 A. Yeah, I'm trying to picture the images in my
10 mind, but I do believe I received those.

11 Q. Did you receive any photographs regarding the
12 processing of the pit by Special Agents Pevytoe,
13 Sielehr and Rindt, occurring on Thursday the
14 10th?

15 A. Not to my recollection.

16 Q. Okay. So you did not see any photographs showing
17 the pit covered in a blue tarp?

18 A. I do recall a photograph with a blue tarp over
19 it.

20 Q. A blue tarp over it. And how many of those
21 photographs do you recall? There were three
22 rolls of prints.

23 A. I can't recall, specifically.

24 Q. All right. Counsel has provided me some
25 information, so let's take a look.

1 ATTORNEY FALLON: If I may approach the
2 witness, Judge.

3 THE COURT: Go ahead.

4 ATTORNEY FALLON: Thank you.

5 Q. (By Attorney Fallon)~ I'm showing you what has
6 been marked, at least on the information provided
7 by counsel, as roll four; does that look like a
8 series of photographs that you are familiar with?

9 A. Yes, it does. Yes.

10 Q. Great. All right. How about another stack of
11 photographs, looks like D-16, 1 through 23, take
12 a quick look at those.

13 A. Yes, I do recall these.

14 Q. Okay. Great. And D-14, 1 through 28?

15 A. I recall some of the photos within this.

16 Q. Some, but you did not see all of them?

17 A. I cannot state with any certainty that I recall
18 seeing all of them.

19 Q. One last look here, if you would be so kind,
20 D-15, 1 through 24.

21 A. Yes, I do recall these.

22 Q. All right. And you have seen those photographs?

23 A. Yes, I do recall those.

24 Q. As well as the photographs provided to you that
25 were taken by Dr. Eisenberg?

1 A. Yes.

2 Q. Okay. Any other law enforcement reports, did you
3 have the opportunity to examine?

4 A. There was a compiled report that was a
5 computerized simulation of the scene.

6 Q. All right.

7 A. And I did have access to that document in
8 computerized form.

9 Q. That would have been an overview animation by
10 Trooper Austin?

11 A. Yes, that's correct.

12 Q. Now, with respect to the photographs that you
13 have seen there, did you have all of the reports
14 which were generated in conjunction with those
15 photographs?

16 A. I don't know for a certainty that I had all
17 reports.

18 Q. All right. Do you know when those photographs --
19 what day those photographs were taken, from the
20 information you were provided?

21 A. I don't recall.

22 Q. All right. When were you first asked to assist
23 in reviewing this information on behalf of the
24 defense?

25 A. I believe it was November, early November of

1 2006.

2 Q. All right.

3 A. If I recall.

4 Q. And in this particular case, you did not issue a
5 report of your findings, correct?

6 A. No, I did not.

7 Q. You were not asked to write one, I take it?

8 A. That's correct.

9 Q. All right. In the cases that you have testified
10 for the Crown, you usually write a report, do you
11 not?

12 A. I do.

13 Q. As a matter of fact, I suspect that's probably
14 required.

15 A. Oh, yes, absolutely.

16 Q. And that's so that when the gentleman who happens
17 to be on the other side of the prosecution by the
18 Crown, so that they would have fair notice of
19 exactly what opinions you were going to express
20 so they would know what they were?

21 A. Yes.

22 Q. Okay. By the way, while we're at that, when you
23 work for the Crown, generally you have access to
24 all of the information that the officers generate
25 to assist you in formulating the opinions that go

1 into that report; isn't that right?

2 A. I do have access, yes.

3 Q. And I would hazard a guess that it's probably
4 pretty routine practice that you would review all
5 that information before putting your report
6 together as the consulting forensic
7 anthropologist?

8 A. Correct.

9 Q. And that is because forensic means of, by, or
10 pertaining to a court; that's right?

11 A. A legal context.

12 Q. Right. So, in other words, it's taking your
13 field of biological anthropology, your specialty,
14 and kind of merging those principles with the
15 principles of the law, to formulate an opinion
16 and express it in a court of law?

17 A. Yes.

18 Q. Okay. Very good. Let's talk a little bit about
19 your experience, a little more detail. You would
20 agree, would you not, that no two crime scenes
21 are alike?

22 A. I would indeed.

23 Q. As a matter of fact, each crime scene presents a
24 host of different issues and problems that need
25 to be addressed and resolved by those

1 investigating what's before them?

2 A. Yes.

3 Q. And as such, there is a certain amount of
4 professional judgment that needs to be exercised
5 to perform your duties, which takes into account
6 these varying conditions?

7 A. Yes.

8 Q. And while you may have a standard operating
9 practice or procedure, sometimes that procedure
10 has to be modified from time to time, given
11 whatever you find at a location?

12 A. I would accept that.

13 Q. In fact, not every location can be processed with
14 a grid format or a forensic mapping format, can
15 they?

16 A. I don't know if that's true.

17 Q. Well, have you been to any disaster locations or
18 sites?

19 A. Yes.

20 Q. Not all of them are forensically mapped or
21 gridded, are they?

22 A. The ones I have been involved with they have had
23 a form of grid put in.

24 Q. But you can't say that that necessarily occurs in
25 all cases?

1 A. No, I cannot state that. That's correct.

2 Q. All right. And there may very well be good

3 reasons to depart from standard protocol and

4 procedures when processing a scene?

5 A. I would accept that.

6 Q. And I would imagine in your neck of the woods in

7 northern Ontario, weather is a pretty important

8 factor in processing scenes, especially this time

9 of year?

10 A. Absolutely.

11 Q. That might be one of the reasons that you might

12 depart from a certain set of procedures, to

13 account for that?

14 A. I have yet to do so. I have done winter

15 recoveries in cremains cases and have not

16 deviated from the protocols that I have been

17 using.

18 Q. But you can imagine a situation where that is

19 likely to occur?

20 A. I suppose.

21 Q. Sure. All right. I would like to talk a little

22 bit about fires. In your work, as I understand

23 it, and maybe this is a good way to get into it,

24 you specialize in studying cremations?

25 A. Cremated remains.

1 Q. Cremated remains. Now, are those cremated
2 remains, are those the kind that we're talking
3 about in crematoriums, or do you use the word
4 cremated remains in a more natural consequence?
5 A. A more natural consequence.
6 Q. All right.
7 A. Not commercial cremations.
8 Q. Not commercial cremations. Are you familiar with
9 commercial cremations?
10 A. Yes, I am.
11 Q. All right. And while we're at that, would it be
12 fair to say that it takes about 3 million BTUs to
13 cremate a human body?
14 A. 3 million?
15 Q. Yeah.
16 A. I wouldn't know that, specifically.
17 Q. You wouldn't know.
18 A. My knowledge is with time and temperature.
19 Q. Time and temperature.
20 A. Correct.
21 Q. All right. Then the average temperature to
22 cremate remains varies somewhere between 1600 and
23 1800 degrees, anywhere from an hour and a half to
24 two and a half hours? That sounds about right?
25 A. I take it the degrees are in Fahrenheit?

1 Q. Correct.

2 A. Yes, that would be correct.

3 Q. That's right, I forget, you guys use Celsius.

4 A. Right.

5 Q. You are not going to make me convert centigrade

6 to Fahrenheit, are you?

7 A. That's --

8 Q. Because I'm a lawyer, I can't do that.

9 A. I will do my best to convert my numbers.

10 Q. We might need a translator yet. All right. And

11 while we're at it, a BTU is a British Thermal

12 Unit?

13 A. Yes.

14 Q. And would you accept the general proposition that

15 one BT is the -- BTU is the amount of energy to

16 raise the temperature of water one degree from 59

17 1/2 degrees Fahrenheit to about 60 1/2 degrees

18 Fahrenheit?

19 A. I believe that's the definition.

20 Q. All right. And actually --

21 ATTORNEY STRANG: We would need a volume of

22 water for BTU.

23 ATTORNEY FALLON: Liter of water, excuse

24 me, you're right.

25 A. Yes.

1 Q. (By Attorney Fallon)~ And a BTU is a means of
2 measuring energy, right?

3 A. Yes, it is.

4 Q. All right. Now, when you are looking at cremated
5 remains in nature, one of the things that you
6 would ask yourself, as a forensic anthropologist,
7 you would want to know what the fuel load was;
8 you might be interested in how such a fire was
9 created?

10 A. The type of fuel, yes.

11 Q. Right. And we have at least four basic types of
12 fuel, do we not? We have a liquid form of fuel?

13 A. Yes, liquid. Solids.

14 Q. We have solids?

15 A. Gaseous.

16 Q. We have gas or vapor?

17 A. Yes.

18 Q. And we have aerosols and even dust?

19 A. Yes.

20 Q. Right?

21 A. That's correct.

22 Q. In fact, some powders, even wheat flour can
23 somehow be exploded?

24 A. Yes.

25 Q. Okay. So you would agree, that in terms of

1 determining the probability of burning human
2 remains at nature, depends in large part on the
3 fuel load, and more importantly, the exposure of
4 the body to the heat itself?

5 A. That's correct.

6 Q. As a matter of fact, in terms of the exposure of
7 the body to the heat, the more surface area which
8 is exposed to the heat, the quicker and faster
9 the remains will reach that cremated state,
10 correct?

11 A. That is correct.

12 Q. So the bottom line is, whenever you are looking
13 at that, what you want to do is try to assess, is
14 how long the parts of the body were expursed --
15 were exposed to a certain temperature?

16 A. Yes.

17 Q. All right. And it's not so much the flame, by
18 the way, that we're worried about, it's the
19 exposure to the heat --

20 A. Yes.

21 Q. -- generated by the flame?

22 A. Yes.

23 Q. Now, we have a variety of solid fuels that are
24 commonly used to burn, most notably, wood seems
25 to be the most common, correct?

1 A. Certainly.

2 Q. All right. And would you disagree with me if I
3 were to tell you that per pound of wood would
4 generate about 5,000 BTUs?

5 A. I have no basis to disagree with that.

6 Q. All right. And that a pound of coal would
7 generate, roughly, about 12,000 BTUs?

8 A. That sounds about right.

9 Q. And oil would be about 16,000 BTU?

10 A. Yeah, 16. Yeah.

11 Q. All right. Now, one of the things that could be
12 used for a fuel would be a tire, correct?

13 A. Absolutely.

14 Q. And as a matter of fact, a tire generates
15 anywhere from about 14,000 BTU to 16,000 BTU per
16 passenger tire?

17 A. Yes.

18 Q. And it's 14 to 16 because, if you shred the tire,
19 you are likely to end up with about 16,000 BTUs
20 of energy per pound of tire?

21 A. That would be right.

22 Q. And the reason that happens is because there is
23 more surface area of the tire which is exposed,
24 and thus generating more heat?

25 A. Precisely.

1 Q. The average passenger tire is about 20 pounds,
2 right?

3 A. Thereabouts, yeah, I would agree.

4 Q. All right. So, then, the average passenger tire
5 would generate anywhere from about 280,000 to
6 300,000 BTUs of energy?

7 A. I would accept that.

8 Q. And tires are a pretty good source of fuel
9 because they burn consistently and they burn very
10 hot?

11 A. Oh, yes.

12 Q. They generate a great deal of heat?

13 A. I agree.

14 Q. And, as a matter of fact, you would expect to see
15 a very large flame pile from one burning tires,
16 correct?

17 A. Flame pile?

18 Q. Flame, a high flame.

19 A. Oh, a high flame, yes.

20 Q. All right. And they would generate a great deal
21 of heat?

22 A. Yes.

23 Q. Okay. Now, before a body can be cremated,
24 whether it's in the crematorium or in the wild,
25 as it were, the body first has to be heated to a

1 significant degree or temperature, correct?

2 A. Yes, that would be correct.

3 Q. All right. As a matter of fact, you have to, for
4 all intents and purposes, you have to dehydrate
5 that body first?

6 A. The process begins with, obviously, the exterior
7 of the body. And heating things such as hair,
8 for example, would be the first area that is
9 lost, if there is no clothing.

10 Q. And as you heat the body, it begins to dehydrate.
11 And after a particular point in time, the body
12 itself, the remains become actually more fuel for
13 the fire?

14 A. Once you get through the skin, it becomes more
15 fuel, the fats of the body do serve as a fuel for
16 the fire, that is correct.

17 Q. As a matter of fact, back in days of antiquity,
18 when they had funeral pyres, they would often
19 smear the bodies with animal fat to assist in
20 creating the funeral pyre?

21 A. In order to get the ignition, yes.

22 Q. Now --

23 ATTORNEY FALLON: What time -- do you want
24 to take a break?

25 THE COURT: If you are at a logical break

1 in the questioning, I think that's a good idea.

2 ATTORNEY FALLON: Sure.

3 THE COURT: All right. Members of the
4 jury, we're going to take our afternoon break at
5 this time. I will remind you not to discuss the
6 case during the break. You are excused at this
7 time.

8 (Jury not present.)

9 THE COURT: You may be seated. Counsel, I
10 would like to see you briefly in chambers, now, at
11 the start of the break.

12 ATTORNEY FALLON: Okay.

13 (Recess taken.)

14 (Jury present.)

15 THE COURT: Mr. Fallon, you may resume.

16 ATTORNEY FALLON: Thank you, Judge.

17 **CROSS-EXAMINATION CONTD.**

18 BY ATTORNEY FALLON:

19 Q. Doctor, I would like to finish up our discussion
20 of the burning human remains in the natural
21 setting. You would agree, would you not, that
22 there are several variables that are at play in
23 trying to decide how a body was burned and how
24 long it would have taken and things of that
25 nature, correct?

1 A. Yes, I would agree.

2 Q. All right. For instance, you would want to know
3 the type and the amount of the fuel?

4 A. Yes, that would be important.

5 Q. And you would certainly want to know what the
6 weather conditions were, correct?

7 A. That would have an influence.

8 Q. That would have an influence. You would want to
9 certainly know what the ratio is of the fuel
10 mixture to the -- what is the item being burned?

11 A. If possible.

12 Q. And very importantly you would want to know the
13 extent to which the body was exposed to the heat
14 generated by the fuel?

15 A. Yes.

16 Q. Now, you would agree, would you not, that an
17 unattended -- we will use the term "funeral
18 pyre".

19 A. All right.

20 Q. Given all other variables being the same, but an
21 unattended funeral pyre would burn at a slower
22 rate than an attended one?

23 A. In general, yes.

24 Q. Because one -- an attended one, presumably the
25 person who is conducting the fire, or managing

1 the fire, that's probably a better word, would be
2 able to make sure that the fuel load is
3 adequately distributed to all parts of the fire?

4 A. Yes.

5 Q. All right. And, as a matter of fact, if the
6 attending person wanted to make sure that the
7 human remains were fully exposed to the heat,
8 there may be some dismembering, correct?

9 A. Dismembering in what sense?

10 Q. Well, if you were to -- if you were to -- Let's
11 put it right on the table. If you were to chop
12 up human remains, there would be more surface
13 area exposed to the heat?

14 A. Yes, I would accept that.

15 Q. All right. And, as a matter of fact, if that was
16 occurring, then the remains would be consumed
17 more quickly than if you had just left a body in
18 toto, laying on a funeral pyre?

19 A. Yes, I would agree.

20 Q. All right. I want to go back and visit the
21 testimony that you discussed with counsel
22 regarding the burn pit as being the potential, or
23 possible, area of initial or original burn, and
24 talk also about the impact, or no impact, of the
25 burn barrel.

1 A. Okay.

2 Q. Just so we're oriented.

3 A. Sure.

4 Q. Perhaps the best place to begin is, I think we
5 have an agreement, that for the minutest form of
6 human bone, which has been subjected to a great
7 deal of heat, professional training, in all
8 likelihood, would be required to identify those
9 items?

10 A. I would agree.

11 Q. In fact, there are certain bits of human remains
12 which are so small they could actually be the
13 quarter -- quarter -- one quarter of a finger
14 nail, might be just that much of a sliver of a
15 bone that could be -- that the remains are
16 present for?

17 A. Yes.

18 Q. And to the average person, and that includes all
19 of us here, with the exception of yourself I
20 would imagine, the chances of us being able to
21 recognize an item that small as part of a human
22 anatomy are about slim to none?

23 A. That sounds reasonable.

24 Q. And you are aware that the vast majority of human
25 remains, fragmented human remains of that size,

1 were recovered from the burn pit area, correct?

2 A. Yes.

3 Q. And you are also aware, are you not, that various
4 articles of clothing were recovered from that
5 burn pit as well, correct?

6 A. Yes.

7 Q. All right. You are aware that there were some
8 rivets that looked like they went to a pair of
9 blue jeans?

10 A. Yes.

11 Q. A zipper?

12 A. Yes.

13 Q. All right. And all of those were recovered from
14 the burn pit and from no other location that you
15 are aware of?

16 A. To my knowledge, that's correct.

17 Q. All right. And just so that I'm clear, it's your
18 understanding that, clearly, the -- some bones
19 had to have been moved because we have human
20 remains not only in the burn pit, but we have
21 them in this burn barrel a couple hundred feet
22 away?

23 A. Yes.

24 Q. All right. So you would agree that the only real
25 explanation for that to have happened is human

1 agency?

2 A. I would agree.

3 Q. In other words, a person had to have taken them

4 from one place and put them in another?

5 A. Yes.

6 Q. And in terms of the burn barrel, you are aware

7 that there was no articles of clothing found from

8 that particular burn barrel; there were no

9 rivets?

10 A. That's my understanding.

11 Q. No grommets from shoes?

12 A. That's correct.

13 Q. No zippers?

14 A. That's correct.

15 Q. And most of the bone fragments were of -- well,

16 they were of a larger variety than those

17 recovered from the pit itself?

18 A. Yes.

19 Q. Right?

20 A. Right.

21 Q. Okay. Now, one thing, if you could clear up for

22 me, I'm not sure, did you say that the bones in

23 the barrel had a greater degree of burned affect,

24 or was it the burns (sic) in the pit, which was

25 it?

1 A. I believe it was the burns -- the bones in the
2 pit appeared to have a greater -- a longer stage,
3 shall we say.

4 Q. A longer exposure, as it were, to the heat.

5 A. Yes.

6 Q. In other words, they showed greater
7 fragmentation?

8 A. Greater heat condition -- damage, yeah.

9 Q. Right.

10 A. Yeah.

11 Q. Which may very well account for the fact that we
12 have all of the really microscopic and very, very
13 small fragment of bone recovered from the pit;
14 that would certainly be consistent, right?

15 A. I can't deny that.

16 Q. Okay. Now, as I understand your testimony, it's
17 clear to you that the remains that were recovered
18 here, most of which came from the burn pit, are
19 the remains of an adult female?

20 A. Yes.

21 Q. And you do not take any issue with the fact that
22 there is clear evidence of at least two gunshot
23 to the cranial pieces, which were able to be
24 recovered?

25 A. That's correct.

1 Q. And you would agree, would you not, that they are
2 entrance defects, correct?

3 A. Yes.

4 Q. And that's because the beveling, which is
5 present, is on the outside of the -- in other
6 words, the entrance area, correct?

7 A. No, that is not correct.

8 Q. It's on the inside?

9 A. It's on the inside.

10 Q. And if they were exit wounds where would the
11 beveling be?

12 A. On the exterior.

13 Q. On the exterior?

14 A. Right.

15 Q. And in your opinion -- Well, let's digress
16 momentarily. You had some question regarding
17 cause of death and manner of death, let's just --
18 the only matter at issue here is manner of death.
19 Now, in the remains that you observed here, you
20 would agree, would you not, Doctor, that there
21 would be no point in attempting an autopsy?

22 A. Not in the traditional sense, no.

23 Q. There's certainly not enough tissue, in fact
24 there's no tissue left to examine?

25 A. I understood there to be some tissue recovered.

1 Q. Some tissue?

2 A. Some tissue, however charred.

3 Q. However charred. Which some DNA analysis was

4 undertaken; are you aware of that?

5 A. Yes, that's my understanding.

6 Q. But, by and large, that's really the only piece

7 of mushel -- muscle tissue that was recovered?

8 A. Yes.

9 Q. And that alone, certainly would not be enough for

10 one to conduct an autopsy in the traditional

11 sense, correct?

12 A. That is correct.

13 Q. All right. And you would agree, as an

14 anthropologist, whether you have an

15 archaeological perspective, or even a biological

16 perspective, that examining bones in the

17 condition in which these were found is, in large

18 part, almost strictly the purview of a forensic

19 anthropologist?

20 A. We are best to quantify and examine the cremains,

21 certainly for the traditional areas that forensic

22 anthropology deals with.

23 Q. And you certainly wouldn't disagree with the fact

24 that what you have is an individual who was

25 murdered, would you?

1 A. I don't know that to be true or not.

2 Q. Well, you wouldn't disagree with that as a

3 logical conclusion to be drawn from the evidence

4 provided, would you? I mean, she didn't jump in

5 the fire herself?

6 A. No. No. I would agree with that.

7 Q. And certainly didn't shoot herself in the head

8 twice, right? That would be pretty hard to do.

9 A. It may surprise you to know that I know that it's

10 been done, but.

11 Q. How many times have you seen that done, Doc?

12 A. One.

13 Q. All right. Out of how many thousands of cases?

14 A. Yeah, exactly.

15 Q. All right. Now, you can't say, to a reasonable

16 degree of scientific certainty, that that burn

17 pit was not the original place of the burning,

18 can you?

19 A. That's correct.

20 Q. I would like you to tell me just what evidence

21 you have that the body could have been burned in

22 the burn barrel?

23 A. I have none to support it.

24 Q. Absolutely none, right?

25 A. That's correct.

1 Q. In fact, the greater weight of the evidence,
2 which is presented to you, would show that that
3 barrel, in all likelihood, was not the location
4 of the original burning?

5 A. I can't say one way or the other.

6 Q. Well, a typical 55 gallon drum, in which it
7 certainly would be difficult to put an adult
8 female of approximately 5 foot 6 in stature, and
9 stuff her into a barrel and burn her; that
10 wouldn't be the easiest of things to do, right?

11 A. I wouldn't imagine it being easy, no.

12 Q. And a matter of fact, it would be -- it would
13 take -- you would have to agree, it would take
14 far longer time to actually reduce a human being
15 to the level of which you found the bones in the
16 burn pit? It would take a lot longer to do that
17 in a burn barrel?

18 A. Not necessarily.

19 Q. There is not enough exposure. You would have
20 to -- you would have to expose that body to a
21 great deal of heat, correct?

22 A. You would, yes.

23 Q. All right. And it would be certainly really
24 difficult to put in a lot of tires and high
25 burning accelerants in that particular barrel,

1 correct?

2 A. A large number of tires would be very difficult,
3 yes.

4 Q. Nor can you say, Doctor, that the boiler on the
5 property was the place where the original burning
6 occurred, can you?

7 A. That's correct.

8 Q. And you can't say that the smelter is the place
9 of the original burning, correct?

10 A. That is correct.

11 Q. Now, you had photographs of those items, right?

12 A. That's correct.

13 Q. And you looked at the cellulose ash which was
14 recovered from the wood burner boiler, right?

15 A. Yes.

16 Q. That ash is entirely inconsistent with the type
17 of ash and debris which was recovered from the
18 pit, correct?

19 A. From what I recall, yes.

20 Q. All right. And in your -- And your review of
21 strictly the photographs of the smelter, there
22 was no ash, or charring, or anything inside the
23 smelter, right?

24 A. That's correct.

25 Q. That you could see?

1 A. That I could see, that's correct.

2 Q. So, we certainly can't say that the smelter was
3 the place where the remains were burned, right?

4 A. Not to my knowledge, no.

5 Q. All right. By the way, are you familiar with a
6 process called board certification?

7 A. Yes, I am.

8 Q. And what is that?

9 A. It's -- Board certification for forensic
10 anthropologists is the American Board of Forensic
11 Anthropology.

12 Q. You have not yet pursued that certification; is
13 that right?

14 A. That is correct.

15 Q. Okay. All right. Oh, one more thing, Doc, you
16 never looked at the bones in this case, did you?

17 A. I did not.

18 Q. Thanks.

19 A. Thank you.

20 THE COURT: Mr. Strang, any redirect?

21 ATTORNEY STRANG: I do, thank you.

22 **REDIRECT EXAMINATION**

23 BY ATTORNEY STRANG:

24 Q. Dr. Fairgrieve, you were asked a number of
25 questions about what it is that you had to look

1 at?

2 A. Yes.

3 Q. Was there anything at all that you asked Mr.

4 Buting or me for that we declined to give you?

5 A. Not to my knowledge. I don't recall that there

6 was anything denied that I was asked for.

7 Q. And anything you thought you needed that you

8 asked us for and we said we had but wouldn't give

9 you or that we didn't have, for that matter?

10 A. No, I don't believe so.

11 Q. Is there any evidence at all that you have seen,

12 in all of the photographs you have looked and

13 Dr. Eisenberg's two reports or in her testimony,

14 that the body you have seen here was dismembered

15 in any way, before burning?

16 A. Prior to burning, no.

17 Q. Had tires, rubber tire, car tires, some sort of

18 tire, been used as a fuel to burn this body,

19 would you have expected a burnt rubber residue

20 sort of smell on at least some of the bone

21 fragments?

22 A. I have encountered that myself, in

23 experimentation.

24 Q. Is it a pungent or a strong smell?

25 A. When you are close to the bones, it can be

1 strong.

2 Q. And when you say you have encountered that
3 yourself in experimentation --

4 A. Yes.

5 Q. -- perhaps you can tell us what that is.

6 A. Part of the research that I undertake is to do
7 test burns. And we utilize, for these purposes,
8 pig carcasses, of varying sizes, to mimic human
9 remains. And burning up tires is just one such
10 scenario of consuming the flesh.

11 Q. And as a fuel?

12 A. As a fuel, yes.

13 Q. Have you done that yourself?

14 A. Yes, I have.

15 Q. And what did you smell with the -- you know, the
16 burnt remains of the pig, afterwards?

17 A. Quite a pungent odor associated with the remains
18 from the actual smell of the rubber.

19 Q. Is there any reason at all -- No, let me back up,
20 because I want to be clear. You are not here to
21 tell us that you can say any particular site is
22 the burn site in this case?

23 A. That's correct.

24 Q. Okay. Neither are you able to rule out or
25 exclude any possible burn site, if I understood

1 you?

2 A. That's correct.

3 Q. What you have told us is, that in your

4 experience, you find the majority of bones

5 usually in the place to which bones are moved,

6 not the place from which they are moved.

7 A. Yes, that's accurate.

8 Q. Including smaller or more delicate bones?

9 A. Yes, I have found that to be the case.

10 Q. In your experience, do you have any reason to

11 think that a dead human body could not be put in

12 a 55 gallon drum or burn barrel?

13 A. No, I see no reason why it couldn't.

14 Q. Do you have any idea at all here, in the end,

15 where clothing fragments, whether that's fabric

16 or metal items, or grommets from clothing, were

17 recovered?

18 A. From other locations?

19 Q. Do you have any idea where -- where the police

20 may have found remnants, or possible remnants of

21 clothing?

22 A. From what I understood, it was from the actual

23 burn barrel. The pit behind the Avery garage.

24 Q. Okay. You don't know whether fragments were

25 found elsewhere?

1 A. Not to my knowledge.

2 Q. Neither do you know whether they were missed
3 elsewhere?

4 A. Definitely not.

5 Q. You spoke of the -- on the average, of the
6 fragments in the burn barrel being larger than,
7 on the average, the fragments in the burn area --

8 A. Yes.

9 Q. -- behind the garage? What were the largest
10 fragments you saw of bone here, regardless where
11 found?

12 A. As I recall, I believe it was the cranial
13 fragments.

14 Q. And about how big were those?

15 A. Oh, I would say, looked like about an inch and a
16 half in diameter.

17 Q. Okay.

18 A. Something on that order.

19 Q. So when we're talking about large and small --

20 A. Yeah.

21 Q. -- as I understand, everything here is about an
22 inch and a half on down, to smaller than that?

23 A. From what I recall, yes.

24 Q. Is a barrel something in which burnt human
25 remains might be moved and then, you know, turned

1 over or dumped elsewhere?

2 A. Oh, sure.

3 ATTORNEY STRANG: That's all I have. Thank
4 you.

5 THE COURT: Mr. Fallon, anything else?

6 ATTORNEY FALLON: About three questions.

7 **RECROSS-EXAMINATION**

8 BY ATTORNEY FALLON:

9 Q. The smell that one might, on occasion, find from
10 human remains subjected to a fire involving
11 rubber, that smell would dissipate over time,
12 right?

13 A. It is possible, yes.

14 Q. As a matter of fact, it would certainly be
15 subject to the elements of weather, would it not?

16 A. I agree.

17 Q. And that would certainly help dissipate the
18 smell?

19 A. That's possible, yes.

20 Q. As a matter of fact, the greater degree of
21 charring and calcination the less likelihood you
22 are going to have that kind of smell, because
23 there's not much for it to attach it to, right?

24 A. That is correct.

25 Q. I lost my train of thought. If I may have one

1 moment.

2 ATTORNEY FALLON: I'm afraid you're lucky,
3 Doc, I lost that train of thought. I'm done.

4 THE COURT: Mr. Strang, anything else?

5 ATTORNEY STRANG: No, thanks.

6 THE COURT: Very well, you are excused.
7 Mr. Strang.

8 ATTORNEY STRANG: What I would propose to
9 do at the moment is simply to read a stipulation to
10 which both Mr. Avery and the State have agreed, as I
11 understand it.

12 THE COURT: Is that correct, counsel?

13 ATTORNEY KRATZ: Yes, that's fine, Judge.

14 THE COURT: All right. You may do so.

15 ATTORNEY STRANG: Ladies and gentlemen, the
16 parties agree that, on October 31, 2005, Steven
17 Avery spoke twice with Jodi Stachowski, his
18 girlfriend, on his cordless land telephone line.
19 Each conversation was about --

20 THE COURT: Just a second, Mr. Strang, I
21 don't think number seven is working any more. So
22 you may want to use the --

23 ATTORNEY STRANG: The trial is over when
24 the electronics die? Do I need to start over?

25 THE COURT: I think that would be best.

1 ATTORNEY STRANG: All right. The
2 stipulation reads as follows: The parties agree
3 that, on October 31, 2005, Steven Avery spoke twice
4 with Jodi Stachowski, his girlfriend, on his
5 cordless land telephone line. Each conversation was
6 about 15 minutes. The first began at 5:36 p.m. and
7 the second began at 8:57 p.m.

8 THE COURT: And, Mr. Kratz, is the State
9 joining in that stipulation.

10 ATTORNEY KRATZ: It certainly is, Judge.

11 THE COURT: Very well. We'll receive the
12 stipulation. Mr. Kratz -- or Mr. Strang, excuse me.

13 ATTORNEY STRANG: Next defense witness,
14 briefly, is Investigator Mark Wiegert.

15 THE COURT: Very well.

16 **INVESTIGATOR MARK WIEGERT**, called as a
17 witness herein, having been first duly sworn, was
18 examined and testified as follows:

19 THE CLERK: Please be seated. Please state
20 your name and spell your last name for the record.

21 THE WITNESS: Mark Wiegert, W-i-e-g-e-r-t.

22 **DIRECT EXAMINATION**

23 BY ATTORNEY STRANG:

24 Q. Good afternoon, again, Mr. Wiegert.

25 A. Good afternoon.

1 Q. I think you probably were here in the courtroom
2 with us when a young woman named Lisa Buchner
3 testified yesterday?

4 A. Yes, sir.

5 Q. Had you interviewed her previously?

6 A. Yes, I remember the interview very well.

7 Q. Was that -- Did the interview take place on
8 Monday, November 7, 2005?

9 A. It did, yes.

10 Q. All right. And among other things, did Ms
11 Buchner tell you, on Monday, November 7, 2005,
12 that she remembered some things on Saturday,
13 November 5, and thought it would be important
14 that we would know; we, meaning law enforcement,
15 would know that information?

16 A. Yes, she had basically shown up at the checkpoint
17 where we had security up out on Highway 147. And
18 I had gotten a call from them stating that
19 there's somebody at the checkpoint that had
20 information. And that would happen periodically
21 throughout the time we were out there.

22 And, in fact, we would get a lot of
23 phone calls about information as well. But, what
24 had happened is, I didn't have any other
25 detectives to interview her because they were all

1 out doing other interviews, on leads and things
2 like that. So I told them to let her through the
3 checkpoint. I met her at the Command Post.

4 Q. On the 7th?

5 A. On the 7th.

6 Q. Right. Okay. And she -- You interview her and
7 she tells you, you know, that she saw a female
8 taking pictures around 3:30 p.m. one day?

9 A. That's correct.

10 Q. And when you are talking to her on Monday,
11 November 7, she was able to tell you that this
12 observation of a female taking pictures of the
13 van happened either on Monday, October 31, or
14 Tuesday, November 1, or maybe Wednesday,
15 November 2; do I understand that correctly?

16 A. That's -- That's what she had told me that day,
17 or she did not know what color the van or
18 anything was.

19 Q. Right. And -- And she could narrow it down only
20 to one of those three days, but it was the week
21 before she was speaking to you on Monday,
22 November 7th?

23 A. That's what she had indicated that day; however,
24 she couldn't give me a -- what kind of weather it
25 was that day. Nothing else stood out in her mind

1 that day. She just thought it was between those
2 three days. Again, she didn't know what color
3 the van was or anything.

4 ATTORNEY STRANG: Okay. That's all I had.
5 I just wanted to nail down the time. Thank you.

6 THE COURT: Mr. Kratz.

7 ATTORNEY KRATZ: Thank you, Judge.

8 **CROSS-EXAMINATION**

9 BY ATTORNEY KRATZ:

10 Q. Mr. Wiegert, I'm showing you what's been received
11 as Exhibit No. 86. When you spoke to Ms Buchner
12 early on in this investigation, was she able to
13 explain or describe for you where this woman was
14 seen taking the photographs?

15 A. She had indicated, at the time she saw this woman
16 taking photographs, was towards the shop area, if
17 you will, at the intersection of Avery Road,
18 where it meets with the driveway, where you go
19 down to the residences. There's a set of mail
20 boxes there and right in that area.

21 Q. I'm going to use my laser pointer, is this the
22 area where Ms Buchner said she saw the person
23 taking those photographs?

24 A. That's what she had thought, yes.

25 Q. Now, when you got to the Avery Salvage property

1 on the 5th, that's the first day that you were at
2 the property, we have seen photographs, but
3 wasn't the van that Ms Halbach was taking
4 pictures of actually down in this area, near
5 Mr. Avery's residence?

6 A. Yeah, it was still down there. And that's what
7 other witnesses had told us, too, that it was
8 down there.

9 Q. All right. Last question I have for you,
10 Investigator Wiegert, at least on this point is,
11 this intersection here, is that the main road or
12 intersection, if you will, for people coming into
13 the business property itself?

14 A. Yeah, I think it's actually a town road, I think
15 it's -- from my recollection, I think the town
16 upkeeps that road, so it's actually a traveled
17 roadway that leads down to the salvage yard and
18 that's where people come and go to do their
19 business.

20 Q. And, in fact, I think there is one other exhibit
21 that may show this a little bit better even,
22 Exhibit No. 81, that's been received. I will
23 show you and the jurors that intersection; do you
24 recognize that?

25 A. I do, yes.

1 Q. In fact, this intersection, which shows actually
2 two Command Post vehicles, I'm pointing to those;
3 is that where the law enforcement officers set up
4 their command center?

5 A. Yes.

6 Q. And isn't it, in fact, true, Investigator
7 Wiegert, that this very vehicle I'm pointing to
8 here, a Blazer, as well as a Pontiac Grand Prix
9 behind it, were vehicles that were for sale at
10 the Avery Salvage property when you arrived there
11 on the 5th?

12 A. Yes. And that would make sense, I mean, if
13 you're going to sell a car, you're going to have
14 it up where people are coming and going.
15 Wouldn't make sense to have it down --

16 ATTORNEY STRANG: That's pretty
17 speculative, your Honor, I will object.

18 THE COURT: The Court will sustain the
19 objection and order that the last part of the answer
20 be stricken.

21 ATTORNEY KRATZ: That's fine.

22 Q. (By Attorney Kratz)~ Let's talk about this
23 Blazer, right here, the red and black Blazer. In
24 fact, did you see photographs earlier, that is,
25 that that's one of the pictures that Teresa

1 Halbach took, a photograph of that very Blazer
2 that's depicted in Exhibit 81?

3 A. That is true, yes. I did see those pictures.

4 Q. The Grand Prix behind it is another photograph
5 that Ms Halbach took, that is, the Grand Prix for
6 sale directly behind that Blazer as well; is that
7 right?

8 A. Yes.

9 Q. And, again, both of these vehicles, at least on
10 the 5th, as you got there, were located in the
11 same intersection that Ms Buchner told you she
12 saw some woman out taking pictures of vehicles;
13 is that your understanding?

14 A. That's true, yes.

15 ATTORNEY KRATZ: All right. That's all I
16 have for cross-examination, Judge. Thank you.

17 THE COURT: Any redirect?

18 **REDIRECT EXAMINATION**

19 BY ATTORNEY STRANG:

20 Q. So, if Teresa Halbach was taking pictures of a
21 van or some cars up by the shop area that you
22 have described, on October 31, presumably, or
23 November 1 or November 2, that's not a photo you
24 could attribute to the call to **Auto Trader**
25 earlier on October 31, could you?

1 A. I guess I'm not sure what you are asking.

2 Q. Well, somebody else would have had to ask her to
3 take a photograph up at this end, because that's
4 not where the maroon van was, right?

5 A. The maroon van was not up there.

6 Q. And so if she was taking a picture, she was
7 either doing that on her own or because someone
8 else asked her.

9 A. I don't know that anybody has established that
10 she was taking a picture down there.

11 Q. Well, if Ms Buchner is correct, that she saw a
12 female photographing a van up at that end of the
13 driveway ...

14 A. Ms Buchner didn't say who was taking a picture.
15 She couldn't even give me a description of who it
16 was; she said it was a female.

17 Q. Right, I understand.

18 A. And didn't know what day it was. So it was
19 between a set of days, she thought.

20 Q. Did you find any other information that female
21 photographers were out taking pictures of cars
22 near Avery Road, or that driveway, on any day
23 between October 31 and November 2, 2005?

24 ATTORNEY KRATZ: I'm going to object as to
25 the characterization, Judge. I don't think you have

1 to be a professional photographer to take a picture.

2 ATTORNEY STRANG: I'm not suggesting a
3 professional photographer.

4 Q. (By Attorney Strang)~ Do you have any information
5 at all, as the case agent, or one of the two lead
6 investigators here, of any female taking
7 photographs of a van, or any other car, other
8 than Teresa Halbach, on October 31 to November 2,
9 2005, anywhere on that driveway?

10 A. Where the picture is there?

11 Q. Anywhere on Avery Road or that driveway --

12 A. The only --

13 Q. -- any information at all?

14 A. No, I don't.

15 ATTORNEY STRANG: Okay. That's all I have.
16 Thanks.

17 ATTORNEY KRATZ: One other question.

18 **RECROSS-EXAMINATION**

19 BY ATTORNEY KRATZ:

20 Q. But yesterday you heard Ms Buchner say it could
21 have been a week before, or two weeks before. It
22 wasn't the 31st, even necessarily anywhere around
23 that time frame; you heard that didn't you?

24 A. I did hear her say that yesterday, that's
25 correct.

1 ATTORNEY KRATZ: That's all I have got,
2 Judge.

3 THE COURT: All right. The witness is
4 excused.

5 ATTORNEY STRANG: Scheduling at side bar?

6 THE COURT: Mr. Strang, any more witnesses
7 today?

8 ATTORNEY STRANG: No, that's why I was
9 going to approach side bar; we don't have any more
10 witnesses for today.

11 THE COURT: All right. I will meet with
12 counsel after we conclude today. Members of the
13 jury, we're going to break early today, before you
14 leave, I have an announcement to read to you at this
15 time. Some of these things you have heard before.

16 As you know, the Court's decision not to
17 sequester the jury during the trial is dependent
18 on the jurors not listening to, watching, or
19 reading any news accounts of the case, nor
20 discussing it with anyone, including members of
21 your family or other jurors.

22 For these reasons, it is vital that you
23 do not listen to any conversation about the case,
24 do not read any newspaper or internet reports, or
25 listen to any news reports on the radio or

1 television, about this trial.

2 To assure that you are not exposed to
3 any improper media coverage, the Court has
4 ordered that, for the duration of the trial, you
5 do not watch the local news on television; do not
6 listen to the local news on radio; and do not
7 read the newspaper, unless you first have someone
8 remove any articles about the case.

9 In addition, do not visit any internet
10 websites or web logs, which may include any
11 information about the case, or for that matter,
12 watch any national shows that have any
13 information about the case.

14 The Court understands that some of you
15 may be working at places of employment during the
16 weekend, do not discuss the case with any
17 employers, employees, or patrons. Do not
18 volunteer your status as a juror to anyone.

19 If anyone attempts to discuss the case
20 with you, politely but firmly notify them that
21 you are prohibited from discussing the case. If
22 you are involuntarily exposed to information
23 about the case, from any source, take steps
24 immediately to avoid any further exposure.

25 Should you be exposed to any reports or

1 communications from any source concerning the
2 case during the trial, or should you become aware
3 of anything you believe may affect your ability
4 to serve as a juror, you should not discuss your
5 concerns with any other jurors, but should report
6 any concerns to the jury bailiff.

7 As you know, we are getting close to the
8 end of this trial. It is important for the Court
9 to know that each of you has been able to comply
10 with the Court's restrictions on outside
11 information about this case.

12 Should any of you believe that you have
13 been exposed to any outside information about the
14 case, such as through the news media, or from any
15 other persons, including other family members, or
16 jurors, it is important that you report such
17 information to the Court. You may do so,
18 confidentially, in writing.

19 I would like each of you to think about
20 that matter during the weekend. The Court may
21 individually question members of the jury before
22 we proceed to the final stages of the trial on
23 Monday, to make sure that no juror has been
24 exposed to any improper outside information about
25 the case. With that, you are excused for today.

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(Jury not present.)

THE COURT: You may be seated. And, counsel, then, I will see you in chambers in a few minutes.

ATTORNEY STRANG: Your Honor, before we go off the record, I just want to move Exhibit 501, which is Dr. Fairgrieve's CV.

THE COURT: Any objection?

ATTORNEY FALLON: None.

THE COURT: Exhibit 501 is admitted.

(Proceedings concluded.)

1 STATE OF WISCONSIN)
) ss
2 COUNTY OF MANITOWOC)
3

4 I, Diane Tesheneck, Official Court
5 Reporter for Circuit Court Branch 1 and the State
6 of Wisconsin, do hereby certify that I reported
7 the foregoing matter and that the foregoing
8 transcript has been carefully prepared by me with
9 my computerized stenographic notes as taken by me
10 in machine shorthand, and by computer-assisted
11 transcription thereafter transcribed, and that it
12 is a true and correct transcript of the
13 proceedings had in said matter to the best of my
14 knowledge and ability.

15 Dated this 2nd day of January, 2008.
16
17
18

19 _____
Diane Tesheneck, RPR
20 Official Court Reporter
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22
23
24
25