

1 Jason Schroeder.

2 May I proceed?

3 THE COURT: You may proceed.

4 MR. REISS: Thank you.

5 JASON SCHROEDER,

6 having been duly sworn, testified as follows:

7 DIRECT EXAMINATION

8 BY MR. REISS:

9 Q. Good afternoon, sir.

10 A. Howdy, sir.

11 Q. Scoot forward a little bit. That would be great.

12 A. (Complies.)

13 Q. Will you please introduce yourself to the ladies and
14 gentlemen of the jury?

15 A. Sure. My name is Jason Schroeder. I'm a forensic
16 chemist with the Harris County Institute of Forensic Sciences.

17 Q. And how long have you worked there, sir?

18 A. I've been there about twelve and a half years now.

19 Q. What are your current roles and responsibilities?

20 A. My current roles and responsibilities, I'm a forensic
21 chemist in the trace laboratory. My primary responsibility
22 right now is working gunshot residue cases.

23 Q. And were those your roles and responsibilities in
24 August 2012?

25 A. Yes, sir, they were.

1 Q. Okay. Let's back up, talking about your educational
2 background. Where did you go to college, sir?

3 A. Sure. I went to -- I received a bachelor of science
4 degree in forensic biology, a master of science degree from the
5 University of Florida, and an MBA.

6 Q. Okay. In addition have you -- have you taught in the
7 area of gunshot residue?

8 A. I've taught forensic biology and general forensic
9 science as adjunct faculty.

10 Q. Okay. In particular, do you have any educational
11 responsibilities with regard to the Air Force?

12 A. In the Air Force I was -- instructor at the military
13 police academy, but no specific gunshot residue duty while I
14 was in the Air Force. I'm a retired Air Force military
15 policeman.

16 Q. And what about in Iraq?

17 A. In Iraq I handled police transition teams where we
18 worked with Iraqi police officers for crime scene response and
19 containment.

20 Q. And you received training and course work in the
21 field of gunshot residue?

22 A. Yes, sir. And I've conducted presentations both at
23 professional organizations as well at local area universities
24 on gunshot residue.

25 Q. Okay. Are you a member of any relevant trade

1 associations, any relevant associations in that regard?

2 A. Professional organizations?

3 Q. Yes, sir.

4 A. Yes, sir. I'm a member of American Academy of
5 Forensic Scientists as well as a regional organization,
6 Southwestern Association of Forensic Scientists.

7 Q. And have you examined gunshot residue on few or many
8 occasions?

9 A. Many.

10 Q. And have you testified as an expert before?

11 A. Yes, sir, I have.

12 Q. And particularly here in Harris County?

13 A. Yes, sir.

14 Q. Okay. I want to turn your attention, sir, to -- did
15 you bring a copy of your lab report in this case?

16 A. Yes, sir, I did.

17 Q. And what is that lab report number, sir?

18 A. This one is IFS12-08298-0001.

19 Q. Okay. And was there a medical-legal cross-reference
20 number associated with that?

21 A. Yes, sir, there was.

22 Q. What was that, sir?

23 A. ML10-1797.

24 Q. Okay. Cutting to the chase, did you perform a SEM
25 kit analysis in this case?

1 A. Yes, sir, I did.

2 MR. REISS: Permission to approach the witness, your
3 Honor?

4 THE COURT: You may.

5 MR. REISS: Actually, your Honor, I think that
6 Ms. Fuller identified this as State's Exhibit No. 97, but I
7 think 97 may be taken up with photographs. I don't know if Ms.
8 Fox wants to cross-reference. I thought 97 --

9 THE COURT: I have 97 is a bag of evidence with the
10 bullets and magazines and the contents of them.

11 MR. REISS: So for purposes of the record, what Ms.
12 Fuller had previously identified with the prior witness as
13 Exhibit No. 97 I'm now changing to State's Exhibit No. 98.

14 THE COURT: Okay.

15 Q. (By Mr. Reiss) Can I ask you what has been labeled
16 now as -- to take a look at the packaging and what the contents
17 of State's Exhibit No. 98.

18 A. Yes, sir. (Complies.)

19 These are gunshot residue stubs that I analyzed.

20 Q. Okay. How did you recognize them as being ones that
21 you analyzed, sir?

22 A. Both with a unique identifier that we mentioned, the
23 IFS number, as well as my initials and date on the date of
24 analysis.

25 Q. Where are those initials, sir?

1 A. Both on the outer package, and then as well here
2 whenever I -- and on the package here.

3 Q. Just for purposes of the record, I guess you're
4 pointing at about 1:00 o'clock to the area above the bar code?

5 A. Yes, sir, that would be accurate, as well as on the
6 individual stubs within that.

7 Q. That's your handwriting?

8 A. Yes, sir, it is.

9 Q. And it looks like it's in the same or substantially
10 the same condition?

11 A. Yes, sir, it is.

12 MR. REISS: Your Honor, I'm tendering to Defense
13 counsel both the packaging and the contents of State's Exhibit
14 No. 98 for objection, and barring any objection ask it be
15 entered into evidence.

16 MS. SCARDINO: Defense has no objection.

17 THE COURT: It will be admitted.

18 MR. REISS: Thank you, your Honor.

19 THE COURT: And that's State's 98?

20 MR. REISS: That's State's 98, yes, ma'am.

21 Q. (By Mr. Reiss) Okay. Mr. Schroeder, will you please
22 explain to the ladies and gentlemen of the jury on a basic
23 level what gunshot residue is?

24 A. Sure. Gunshot residue --

25 Q. Let me interrupt you. For purposes of the record I

1 see that you brought kind of a prop with you, so to speak?

2 A. A few demonstrative items.

3 Q. And just for purposes of the record, it looks like
4 it's a model of a bullet?

5 A. Yes, sir, an oversize bullet.

6 Q. About 50 times the size of a regular bullet made of
7 plastic?

8 A. Yes.

9 Q. Okay. Please proceed, sir.

10 A. So gunshot residue is oftentimes thought of as the
11 gunshot powder, which the large propellant, but that would be
12 inaccurate. What we actually look for in gunshot residue is
13 actually a very small portion that goes right in the end cap,
14 that serves as the initiator. So what we're looking for in
15 gunshot residue analysis is actually pretty precise, and it's
16 not what is commonly believed as a gunshot powder.

17 Q. Okay. And the residue, it's comprised of what?
18 There's certain minerals or elements in it?

19 A. Yes, sir. There's three elements that we look for in
20 gunshot residue.

21 Q. What are those, sir?

22 A. They include barium, antimony, and lead.

23 Q. And just purposes of the record, barium is spelled
24 b-a-r-i-u-m?

25 A. Yes, sir.

1 Q. Antimony, a-n-t-i-m-o-n-y?

2 A. Yes, sir.

3 Q. And lead l-e-a-d?

4 A. Yes, sir.

5 Q. And you're looking for what, that unique combination
6 of all three as being part of gunshot residue?

7 A. Yes, sir, that's correct.

8 Q. Okay. So you can have one and not necessarily the
9 other and it's not gunshot residue?

10 A. Yes, sir, that's correct.

11 Q. Now, are some of those elements just around in
12 everyday life?

13 A. Each of the three. Again, barium, antimony and lead,
14 each of the three are known to be environmental -- common in
15 the environment. So if we see one element in and of itself it
16 does not alert us to the presence of gunshot residue.

17 Q. Okay. So, for instance, you could have just barium
18 on your hands and it's not necessarily indicative of gunshot
19 residue?

20 A. Correct.

21 Q. Okay. Where would -- barium, what are some common
22 everyday things in life that we might associate with having
23 barium?

24 A. Barium specifically, all three, but barium
25 specifically is very common in the environment. It's commonly

1 seen in papers, dyes, leather goods, tanning goods, in a number
2 of inks.

3 Q. And those are I guess referred to generally as primer
4 elements?

5 A. Because they're so common, they are certainly in
6 gunshot residue primers, but they are very common throughout
7 the environment also.

8 Q. Okay. Would it be helpful to you, sir, in explaining
9 how gunshot residue is expelled from a firearm to have an
10 actual firearm?

11 A. I've got a picture here as well, so either one.

12 Q. Would you --

13 A. I can work with either.

14 MR. REISS: Is that clear?

15 THE BAILIFF: It's clear.

16 MR. REISS: May I approach the witness, your Honor.

17 THE COURT: You may.

18 Q. (By Mr. Reiss) Sir, I'm showing you what I have
19 premarked for demonstrative purposes only as State's Exhibit
20 No. 99. Can you please take a look at that and see if you can
21 figure out what type of gun that is, please.

22 A. It's a Glock model 22 and .40 caliber.

23 Q. You're familiar with these firearms?

24 A. Yes, sir, I am.

25 Q. Showing this to Defense counsel for inspection for

1 demonstrative -- don't drop it -- for demonstrative purposes
2 only.

3 Permission to publish to the jury?

4 THE COURT: Sure.

5 MR. REISS: With an instruction to the jury, if Your
6 Honor wouldn't mind, that we are not making any representation
7 that this is the actual firearm used in the transaction, just
8 for demonstrative purposes.

9 THE COURT: Just for demonstrative. All right.

10 Q. (By Mr. Reiss) Could you please explain to the ladies
11 and gentlemen of the jury with State's Exhibit 99 how and where
12 gunshot residue is expelled from the firearm.

13 A. Yes, sir. As I mentioned, I could work off a
14 picture, but having a representation of a firearm is a little
15 more precise. It does vary firearm to firearm.

16 A small portion of it would come out the front end.
17 A small portion, even though it's a primer cap, would come out
18 the barrel. A small portion would come out each of the
19 openings between the slide and the lower receiver. But the
20 majority of the gunshot residue would come out of the ejection
21 port right here, the larger opening. It's very intuitive on
22 the ejection port.

23 Q. So basically there's heat and gas and the heat and
24 gas is going to look to escape from wherever it can; is that
25 right?

1 A. Yes, sir, that's correct.

2 Q. Okay. Now, in terms of expelling heat and gas from a
3 firearm, are there certain characteristics of a gun or a
4 firearm -- let's use a Glock 40. Are there certain
5 characteristics of a Glock 40 that might influence that?

6 A. Certain characteristics or --

7 Q. Well, let's -- might certain -- let's assume that a
8 gun is dirty, all right.

9 A. Yes, sir.

10 Q. Assume that a gun is dirty and bought off the street
11 and not well maintained.

12 A. Yes, sir.

13 Q. All right. Might that type of a firearm, Glock 40,
14 expel more gunshot residue than, say, a Glock 40 that is in
15 pristine condition that was just purchased from the arms room?

16 A. Yes, sir.

17 Q. Okay. Why is that?

18 A. Again, it's intuitive that a gun that is just
19 purchased or perhaps one that is well maintained and cleaned
20 thoroughly between use, between trips to the firing range or
21 between use, that that is going to contain less gunshot residue
22 in between discharges. One that is not maintained very well
23 is -- it's just cumulative. Gunshot residue lands on the
24 firearm, and as it's fired over a period of time, you can
25 expect more and more to come off that firearm. And the

1 research shows us that also.

2 Q. Okay. Now, in terms of, I guess when you expel the
3 projectile there's going to be a plume of smoke, correct?

4 A. Correct.

5 Q. Okay. How far are you -- how far, generally
6 speaking, is the plume of smoke expelled out of a Glock 40?

7 A. Generally speaking, there are a number of variables
8 that would affect that, but it would not be uncommon out -- to
9 see that plume out to 10 or even 15 feet.

10 Q. Okay. And it's going to -- and there are going to be
11 variables in that, correct?

12 A. Yes, sir.

13 Q. All right. So the weather might be a variable?

14 A. Yes, sir. The wind.

15 Q. The wind. The proximity to the skin might be --
16 might possibly be a variable?

17 A. The proximity to any surface, and certainly the skin
18 if it's close range, yes, sir.

19 Q. And I guess just an example, if you want to talk
20 about plume of smoke, it would be kind of similar to if you had
21 two erasers with chalk, you bang 'em together, there's going to
22 be a plume of smoke, right?

23 A. I think that would be a fair representation of that
24 action, yes, sir.

25 Q. So that plume of smoke could be -- it could be on

1 someone's hands if their hands are close to the firearm when
2 the projectile is expelled, correct?

3 A. Yes, sir, that would be a fair statement.

4 Q. Okay. Let's talk about the instant case. You did a
5 SEM kit analysis on Aidee Reyna, correct?

6 A. Yes, sir.

7 Q. Okay. What were the results of your SEM kit
8 analysis? Let's talk -- back up. How'd you do the analysis?

9 A. The analysis is done on a scanning electron
10 microscope. It's a microscopy in which a beam of electrons
11 replaces the traditional microscopy that we are all aware of
12 that uses an optical source. That beam of electrons gives us a
13 picture of the morphology of the gunshot residue that we are
14 looking for as well as an x-ray analysis and analytical
15 analysis that allows us to identify the presence of all three
16 elements in a single particle. Again, that's barium, antimony,
17 and lead.

18 And at this point I would like to kind of clarify
19 that. Barium, antimony and lead each exist in the
20 free-standing environment. It's common. But what we look for
21 in gunshot residue is one particle that contains all three of
22 those elements.

23 The rapid heating and cooling during the discharge of
24 a firearm allows those three stand-alone particles to fuse into
25 one substance, and that's what we identify as being

1 characteristic of gunshot residue.

2 Q. Okay. And so the manner in which you go about
3 testing gunshot residue, is that what you did in this
4 particular case?

5 A. Yes, sir, that's correct.

6 Q. What were the results of your analysis?

7 A. The results as we reported them -- and I'll just read
8 right here off the report -- no particles confirmed as having a
9 composition characteristic with gunshot residue were detected
10 on item no. 1 samples labeled right hand and left hand.

11 Q. So there was no gunshot residue on Aidee Reyna's
12 hands?

13 A. Correct.

14 Q. So based upon what we're talking about, the plume of
15 smoke, if a person's hands -- understanding there are a number
16 of variables involved, but you would expect to see gunshot
17 residue on someone's hands, or it's likely there's going to be
18 gunshot residue on someone's hands if it is close to the gun
19 when the firearm is being expelled; is that correct?

20 A. Yes, sir, that's correct.

21 Q. And there's no gunshot residue on her hands, is
22 there?

23 A. No, sir, there's not.

24 Q. So that is consistent then with her hands being
25 further away from the plume of smoke?

1 A. I think that statement can be fairly made, yes, sir.

2 Q. Now, you did find some elements on her hands though,
3 correct? You found barium on her hands?

4 A. Yes, sir, barium on both the right and the left hand.

5 Q. And what kind of levels are we talking about when it
6 comes to barium on her hands?

7 A. On the right hand we found 24 particles and on the
8 left hand 8 particles, both of which I would say was
9 insignificant for the purposes of the gunshot residue. Really
10 no analytical value in the fact that barium was there or those
11 levels.

12 Q. And again, there's nothing in -- your results are
13 consistent with her hands not being close to that firearm when
14 it was discharged?

15 A. Yes, sir. I think that's a fair statement. And just
16 to clarify, sir --

17 Q. Sure.

18 A. Very much what you just said, but the actual verbiage
19 or terminology that we use is close proximity, which is very
20 much in line with the way you just described it.

21 Q. Fair enough. So you're comfortable saying there was
22 not suggested it was in close proximity?

23 A. Correct.

24 Q. I appreciate you clarifying that.

25 MR. REISS: I'll pass the witness, your Honor.

1 THE COURT: Cross-examination.

2 CROSS-EXAMINATION

3 BY MS. SCARDINO:

4 Q. Did you know, sir, and I -- this is kind of a weird
5 question, but are you familiar with the procedure in other
6 counties with regard to gunshot residue?

7 A. I have a --

8 MR. REISS: I object to the relevance, your Honor.

9 Q. (By Ms. Scardino) They have a test on complainants.

10 THE COURT: Sustained.

11 Q. (By Ms. Scardino) This plume of smoke that we're
12 referring to, that actually Mr. Reiss referred to, can you tell
13 me the direction, if there's nothing right there at the end of
14 that gun as the gun is discharged, the -- the plume of smoke,
15 which would contain the gunshot residue, correct?

16 A. The plume of smoke contains the gunshot residue?

17 Q. Yes.

18 A. Yes, ma'am, that is correct.

19 Q. And would it go out like -- like he described, as in
20 a big V out from the gun? Is that the way it works?

21 A. The big V is more commonly associated with gunpowder
22 and stippling.

23 Q. Okay.

24 A. That is from the end of the barrel, and that contains
25 gunshot residue, but gunshot residue also comes out of all the

1 openings of the gun. It creates a plume, what's commonly
2 referred to as a plume, 360, just a cloud that surrounds the
3 entire firearm.

4 Q. And it's not like a V or -- it's just like a -- a
5 spray that goes anywhere and everywhere? I'm not sure -- I'm
6 just trying to get an idea of exactly what happens when you
7 fire the gun and it's -- if I fired at you there's going to be
8 some gunshot residue that falls on the floor here, correct?

9 A. In this scenario that you just described there would
10 be gunshot residue certainly in this direction to your left and
11 right, and even back on you on your hands, just a cloud that
12 envelopes that firearm in all directions.

13 Q. But if the gun is fired close to the -- if the
14 entrance wound and the gun are near each other, say within
15 inches, all of the residue is more likely than not going to
16 fall on the body itself, right?

17 A. No, ma'am, I don't think that's accurate. The only
18 point that I will take issue with, or perhaps disagree with,
19 would be the fact that you state a majority of it. No studies,
20 to my knowledge, can support that. It's truly just a 360
21 plume. Because it is the gunshot residue, and not the gunshot
22 powder, it's truly a 360. It comes out mostly out of that
23 ejection port, some down range from the barrel, but all around
24 the firearm.

25 Q. Does more residue come out of one area, one of those

1 three areas than the other?

2 A. Generally out of the ejection port.

3 Q. And that would be on top of the gun?

4 A. Yes, ma'am, yes, ma'am.

5 Q. And so -- okay. Thank you. I was -- just got a
6 little primer there on gunshot residue?

7 A. Yes, ma'am.

8 Q. Okay. Thank you, Mr. Schroeder. I appreciate it.

9 MS. SCARDINO: I have no further questions.

10 THE WITNESS: Yes, ma'am.

11 THE COURT: May this witness be excused?

12 MR. REISS: Yes, your Honor.

13 THE COURT: Thank you, sir. You may be excused.

14 THE WITNESS: Thank you.

15 THE COURT: Would you call your next.

16 MS. FULLER: The State calls Priscilla Hill.

17 THE COURT: You may proceed.

18 MS. FULLER: Thank you.

19 PRISCILLA HILL,

20 having been duly sworn, testified as follows:

21 DIRECT EXAMINATION

22 BY MS. FULLER:

23 Q. Good afternoon. Would you please introduce yourself
24 to the jury.

25 A. Hi. My name is Priscilla Hill.