

1 minute. Take a break. Off the record.

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Elizabeth A. Brown
Clerk of Supreme Court

2 (Whereupon a short recess was taken.)

3 THE COURT: Go back on the record. Case
4 No. A637772. We're outside the presence still.

5 You wanted to make a supplemental argument,
6 Mr. Mazzeo?

7 MR. MAZZEO: Well, I just wanted to -- I just
8 wanted to suggest to the Court and ask the Court if you
9 would have maybe voir dire and question Dr. Scher
10 outside the presence of the jury with respect to
11 whether the variables that he used, whether he
12 satisfies Hallmark and Yeghiazarian, and whether he
13 satisfies the reliable methodology standard or factor
14 under Hallmark, you know, so --

15 I mean, so that's what I would ask the Court
16 to do before you make a decision, because things -- as
17 I said when we were off the record, I think some of the
18 argument and suggestions to the Court got muddled
19 between what Mr. Roberts was saying and -- and -- which
20 was contrary and, I think, different from what
21 Dr. Scher had actually testified to.

22 And Dr. Scher is -- and I believe -- and I
23 wrote this down -- that he had testified to the fact
24 that the -- the resting point is not important with
25 respect to PC-Crash. Contrary to what Mr. Roberts, who

1 is not an expert, believes, that is not an important
2 factor.

3 MR. ROBERTS: If he testified to that, Your
4 Honor, we move to strike because that's contrary to his
5 expert report in two places.

6 MR. MAZZEO: Well, I'm not saying that he
7 didn't come up with a final resting point in his
8 report, but in terms of the PC-Crash test analysis,
9 that is not important for determining the -- the -- the
10 speeds and the delta-v ultimately.

11 THE COURT: All right, guys. So under
12 Hallmark, in determining whether an expert's opinion is
13 based on reliable methodology, district court should
14 consider whether the opinion is, one, within a
15 reasonable -- recognized field of expertise; two,
16 testable and has been tested; three, published and
17 subject to peer review; four, generally accepted in the
18 scientific community; and, five, based more on
19 particularized facts rather than assumption,
20 conjecture, or generalization.

21 Now, in the Hallmark case the supreme court
22 found that Tradewinds in that case did not make really
23 any attempt to prove the first several things there and
24 consequently found that the expert should not have been
25 allowed.

1 On -- I'm trying to find the pages for you --
2 page 652 of the P.3d cite, going on to page 653, it
3 says, "Tradewinds also did not offer any evidence
4 showing that these types of opinions were generally
5 accepted in the scientific community. Further, his
6 opinion was highly speculative because he conceded he
7 formed it without knowing, one, the vehicle starting
8 positions; two, their speeds at impact; three, the
9 length of time the vehicles were in contact during
10 impact; or, four, the angle at which the vehicles
11 collided."

12 It says that "Tradewinds did not introduce
13 evidence that Dr. Bowles attempted to recreate the
14 collision by performing an experiment, so they could
15 not address whether his opinion was the product of
16 reliable methodology."

17 Further, they find that "Dr. Bowles' opinion
18 was based more on supposition than science because he
19 did not inspect Hallmark's vehicle, he could not
20 identify an area or angle of impact, and he did not
21 know the speed of the vehicles at the time of the
22 collision."

23 That was their collision after looking at the
24 O'Neil v. Windshire Copeland Associates case. Further,
25 after looking at the Smelser v. Norfolk Southern

1 Railway Company case, they said that in that case it
2 did not consider critical pieces of information,
3 instead relied heavily upon assumptions.

4 "Analogous, here, Dr. Bowles concluded that
5 the forces involved in the collision did not cause
6 Hallmark's back injuries by either assuming or
7 failure -- failing to consider critical pieces of
8 information such as the vehicles' starting positions,
9 the speeds, length of time the vehicles were in
10 contact, and the angles of impact."

11 I'm very familiar with the Yeghiazarian case
12 because that was my case. And the evidence in that
13 case was very different from this case. So I don't
14 know that it necessarily helps me.

15 The notes that I had taken in -- while
16 Dr. Scher was on the stand, he placed the point of
17 impact at a location different from what the police
18 report shows. He based it on deposition testimony, is
19 what his testimony was.

20 I think he agreed that there was no evidence
21 of what angles either vehicle was at at the point of
22 impact. He discounted Mr. Awerbach's 30-mile-per-hour
23 testimony, and I think he testified that he concluded
24 it was somewhere between 14 and 20. He used those two
25 numbers. He used 30 miles an hour for Ms. Garcia.

1 Now, when Mr. Strassburg started questioning
2 him, he talked about speeds, angles of impact, vehicle
3 information, laws, distance, coefficient of friction.
4 And in -- to his credit and to Mr. Strassburg's
5 credit -- I mean, he asked all the right questions as
6 far as whether the studies that he was basing his
7 opinions on, whether the laws of physics were laws that
8 have been testable and able to be tested and subject to
9 peer review and things like that.

10 The concern or the problem that I guess I
11 have is the point of impact, he doesn't know. The
12 speeds of the vehicles, he doesn't know, because
13 he's -- he started with the testimony of the parties,
14 but he basically said they were wrong.

15 The point of impact as provided in the police
16 report he says is wrong. He talks about crush and
17 deformation to determine speed and angles, but he
18 testified in his deposition, apparently, that he didn't
19 see the crush and he was only making estimates based on
20 photographs that he's seen.

21 I think this case is similar to the old cases
22 of Choat and Levine that you can't use photographs to
23 determine speed. Part of reason for that is because,
24 in looking at photographs, you can't see the damage
25 that's underneath a bumper or underneath the outside

1 section of a vehicle that you're looking at in a
2 picture.

3 He's using these pictures of crush and
4 deformation to determine speed and angles in this case,
5 which I don't think it has sufficient foundation or
6 evidentiary basis. He talks about coefficient of
7 friction being, I think, .8.

8 Now, I think coefficient of friction, whether
9 he went down to .7 or .9, I'm not going to say that he
10 can't testify based on coefficient of friction because
11 I think that is a standard that's used pretty much
12 everywhere in any case, and I'm okay with that.

13 The problem is he even testified that he
14 overestimates the crush for purposes of his
15 photogrammetry and uses photogrammetry to determine
16 speed and angles.

17 Starting and ending positions in this case
18 are unknown.

19 Further, in Hallmark, even if I get past the
20 initial analysis, you get to the point where, if he's
21 used technique, experiment, or calculations, then the
22 Court should consider whether they're controlled by
23 known standards; the testing conditions, if they're
24 similar; the technique in calculation, does it have a
25 known error rate and was it developed by the -- by the

1 proffered expert for purposes of this case.

2 In looking at that, I don't know that I can
3 say that any of his opinions are controlled by known
4 standards because the opinions that he's offering, I
5 think, are based more on assumption, conjecture, and
6 generalization than they are on the particular facts of
7 the case.

8 I don't know that I've ever excluded an
9 expert from trial based on lack of foundation in the
10 Hallmark case, but in this case I'm going to have to.
11 Sorry, guys.

12 So how do we proceed from here? I know this
13 doesn't make you guys happy. So tell me what you want
14 me to do.

15 MR. MAZZEO: Tell us what we want to do
16 from -- from what perspective, from -- with regard to
17 Dr. Scher, he's done basically; right? I mean, that's
18 your --

19 THE COURT: Well, I don't think there's a
20 foundation for any of the opinions that he's offered or
21 for the opinions that I think you want him to offer,
22 which are even further -- I mean, any opinions that he
23 has to offer that deal with injury or forces, whether
24 forces of daily life, are more than what he experienced
25 in the accident. I think that's all based on the

1 conclusions that he has about the speed and the forces
2 and the impact that I can't let him testify about.

3 I mean, I guess I'm asking you, is there
4 something that you want to -- that he can offer that's
5 separate and aside from those opinions?

6 MR. MAZZEO: May we have a moment, Judge?

7 MR. STRASSBURG: Well, let's go talk to him,
8 Judge, let's find out.

9 THE COURT: And I guess, if you want him to
10 testify about, for example -- well, I'm thinking that
11 he can probably still testify about the -- the forces
12 that are put on a body during the ordinary activities
13 of daily living. But I don't know that that matters if
14 nobody's going to say that the accident was more or
15 less than that. I don't know that that has any
16 relevance.

17 So I don't know. You guys talk and decide if
18 there's something that you think he can offer in light
19 of that ruling.

20 MR. STRASSBURG: Thank you, Judge.

21 THE COURT: Let me know. Off the record.

22 (Whereupon a short recess was taken.)

23 THE COURT: Want to go back on first or stay
24 off?

25 Go back on the record. We're still outside

1 the presence.

2 MR. STRASSBURG: Judge, we would move you to
3 reconsider your ruling, and we would request that you
4 allow Dr. Scher to explain to you why the quantities
5 that you identified in your ruling that you expressed
6 concern about are not material to his use of PC-Crash
7 to figure out only force and motion. Because the
8 physics of it are -- they are -- they don't depend upon
9 the factors that your ruling depended upon.

10 And for purposes of getting it right here in
11 a case that everybody has sunk a lot of time and money
12 into and getting it right for purposes of appeal for
13 the law of this state, that -- that -- the personal
14 injury bar, I mean, we are hiring accident
15 reconstructionists all of the time. It would be
16 important not to shackle the current state of this
17 scientific art with the rulings of cases that are
18 30 years old and have been superseded by scientific
19 development.

20 I mean, Judge Allf heard these cases too and
21 decided that they were not determinative as to what is
22 the standard of appropriate practice for engineers like
23 him.

24 THE COURT: The 30-year-old cases, you're
25 talking about the Choat and Levine cases?

1 MR. STRASSBURG: Yeah, that talk about you
2 can't use photographs. Well, today you can. And it
3 would be --

4 See, Judge, he is trying to figure out the
5 force on the spine. That's all. He -- he is trying
6 to -- and the determinant -- the motion that determines
7 the force on the spine is the 180-degree spin of her
8 vehicle and the fact that it's only 180 degrees.

9 And so all he needs for his purposes is to
10 determine what forces are generated when a vehicle of
11 her cars's weight and characteristics spins 180 degrees
12 on this road surface and comes to a stop. His
13 calculation -- those -- that's how he derives the force
14 on the spine for his biomechanical analysis.

15 This calculation depends solely upon the laws
16 of physics. It is validated in the scientific
17 literature. It doesn't depend upon the starting
18 location of Jared's vehicle. It doesn't depend upon
19 the resting location of her vehicle. What it depends
20 upon is the motion that her vehicle described.

21 And it is uncontested. Nobody disputes the
22 fact that her vehicle proceeding down that road at
23 30 miles an hour was -- was subjected to a force that
24 caused it to spin only 180 degrees.

25 Now, the physical parameters that govern this

1 system determine what a vehicle's describing at motion
2 subjects the occupant to at the level of their spine.
3 So his calculations go to force and motion. They are
4 determined by -- it's a little different than the usual
5 accident reconstruction expert who's just trying to
6 create a version of -- of reality that you can see and
7 the rest location and the start locations. That's not
8 here because that information wasn't available.

9 What -- what he is doing is something
10 different. He's doing a biomechanical analysis. The
11 biomechanical analysis focuses on the forces, the force
12 at the level of the L5-S1 vertebra. That force is
13 determined by the physical principles of the universe,
14 by the 180-degree motion of a car of this weight and
15 wheel base and friction characteristics spinning like
16 that when it's going 30 miles an hour.

17 It doesn't matter for his purposes, just for
18 his purposes, if he's hit by a truck, an airplane,
19 whether Jared's going from a standing stop, whether
20 Jared's running through that intersection or not.

21 THE COURT: Do you want to ask him additional
22 questions?

23 MR. STRASSBURG: Yes.

24 THE COURT: Go for it.

25 MR. ROBERTS: Your Honor --

1 MR. STRASSBURG: Thank you.

2 MR. MAZZEO: Excuse me one second,
3 Mr. Roberts, if I may.

4 I just -- well, I need to go on the record as
5 well. I mean, this is -- we're coming back in now, and
6 I want to make a record. And so --

7 THE COURT: Okay.

8 MR. MAZZEO: And I am also requesting what
9 Mr. Strassburg is requesting, that Dr. Scher articulate
10 all of the factors that he relied upon because I
11 contend that the recitation of factors that you gave,
12 Judge, for -- before you gave your decision,
13 incomplete.

14 And also I want the record to reflect that we
15 had a bench conference just before the jury was excused
16 and, at that bench conference, you had indicated to all
17 the parties that your inclination was that he did
18 satisfy the Hallmark standard.

19 THE COURT: I did?

20 MR. MAZZEO: And then you got an argument
21 from Mr. Roberts that convinced you otherwise for some
22 reason.

23 THE COURT: I went back and I looked at all
24 my notes from his testimony, from -- from everybody's
25 questioning, and I read the Hallmark case again.

1 MR. MAZZEO: And that's what I want to point
2 out, Judge. And then I want Dr. Scher to point that
3 out on the stand.

4 You contend that Dr. Scher relied on
5 photographs and photographs alone to determine the
6 damage done to the body of the vehicle. Well, that's
7 not true. He relied on damage estimates, and you
8 didn't say that in your recitation of factors that
9 you -- you believe that Dr. Scher relied upon.

10 Well, the damage estimates actually give the
11 actual damage that occurred underneath the body of the
12 vehicle, number 1.

13 The area -- the area of initial impact
14 contact in the traffic accident report, as reported by
15 Police Officer Figueroa, that's inaccurate. And -- and
16 Dr. Scher is not going to use an inaccurate figure
17 based on a -- on an estimate used by the officer who
18 walked the distance when, in fact, the accurate
19 estimate that Dr. Scher determined was actually twice
20 the distance. It was 200 feet based on his
21 calculations using, I believe, Google maps.

22 And then -- and then also -- I don't think
23 you also recited and -- or indicated that Dr. Scher
24 relied on the actual vehicle specs, which are
25 identifiable in this case, the size, the weight of the

1 vehicles, et cetera, and the angle of impact.

2 He -- he did say that he had the --
3 identified the angle of impact with respect to the two
4 vehicles based on the damage that occurred to both
5 vehicles. So for the -- for the record, for purposes
6 of appeal, and -- and also for your reconsideration
7 before we move on from this witness, I think it's
8 important to -- for this witness to identify all those
9 factors that he relied upon to see whether or not he
10 actually satisfies Hallmark.

11 MR. ROBERTS: Your Honor, we object to a
12 do-over. And counsel mentioned that, just before the
13 jury was excused, you were inclined to allow him to
14 testify. If I could add a little bit of history since
15 we were off the record.

16 I initially, when this opinion was going to
17 be offered, objected under Hallmark after I did my voir
18 dire. And we came up to the bench, and you said, "I'm
19 inclined not to let him testify because I think he's
20 speculating about all of these factors."

21 But you -- you said, "Mr. Strassburg, if you
22 want to try to lay a foundation, you go ahead before I
23 rule." And then you gave counsel -- the proffering
24 counsel complete latitude to put whatever on the record
25 he wanted to.

1 And it was counsel, Mr. Strassburg, who
2 elicited from the witness the necessary factors to his
3 calculations. And Mr. Scher is the one who said, "I've
4 got to know speed. I've got to know angle. I've got
5 to know the positions." He's the one who elicited
6 this. The witness has said these -- this is necessary
7 information.

8 And it sounds like they now want to say, "Oh,
9 I was wrong. None of that stuff is really necessary.
10 None of that stuff is necessary to my analysis. The
11 report that I issued which relied on all this stuff,
12 well, really, that's not really what I needed to do."

13 And he can't just change his report. He
14 can't contradict the conclusions in his report. He
15 can't contradict what he's already said on the stand
16 that was elicited by counsel.

17 You gave them complete latitude to make
18 whatever record. The record is complete. You've
19 ruled. And we would object to a do-over, and we'd
20 object in contradicting what's in his report and
21 offering some new testimony that "I don't need any of
22 that information. I can still calculate delta-v."

23 Because that's not what he did. He did a
24 PC-Crash to calculate delta-v, and then he plugged the
25 delta-v into the biomechanical software to analyze it.

1 So, Your Honor, the estimate was prepared by
2 the insurance company. The vehicle was never actually
3 fixed, and it was only for the Santa Fe. There is no
4 estimate for the Suzuki. So he could not have relied
5 on an estimate of the Suzuki because it's not -- I've
6 never seen it.

7 THE COURT: Okay. I'm not going to give him
8 a do-over, but I'm going to give him a little bit of
9 opportunity to see if they can change my mind. Because
10 I understand this is an important witness. It's an
11 important case for everybody.

12 So go for it.

13

14 VOIR DIRE EXAMINATION

15 BY MR. STRASSBURG:

16 Q. Dr. Scher, regarding the location of the
17 point of impact, is that a material fact that you need
18 to know for purposes of your analysis or not? And why?

19 MR. ROBERTS: Objection. Asked and answered.

20 THE COURT: I'm going to allow it.

21 THE WITNESS: So we generally know the area
22 of impact based on the testimony. In terms of --
23 sorry.

24 In terms of actually calculating the motions
25 of the vehicles, it doesn't matter whether it happens

1 right in front of the intersection, a few feet north, a
2 few feet south. The vehicle dynamics to spin the
3 Santa Fe, it doesn't make a difference. So overall, in
4 the biomechanical analysis portion, it wouldn't make a
5 difference.

6 BY MR. STRASSBURG:

7 Q. Explain what's important -- what's so
8 important about the spin of the Santa Fe?

9 A. The spin is important because you have a
10 counteraction between lateral motion and spin. When a
11 vehicle is contacted from the side -- say it's a
12 far-side impact, so it's a contact to the passenger
13 side and the driver -- I'm going to move towards the
14 direction of impact from the lateral motion of the
15 vehicle. The vehicle's going to accelerate to the
16 left. I'm initially stationary. So I'm going to move,
17 relative to the vehicle, to the right.

18 When a vehicle spins, you move to the outside
19 or the outboard side. If you've ever gone to an
20 amusement park ride where they spin you around and you
21 get stuck to the wall when the floor drops out, it's
22 the same principle.

23 In this accident those two motions counteract
24 each other, and so we wind up in a situation where
25 there's actually little relative motion because of the

1 spin and the lateral impact counteracting.

2 Q. Dr. Scher, what determines the forces on the
3 lumbar spine that you use in your biomechanical
4 analysis? What -- is it the spin? Is it the beginning
5 location? The rest location? A combination? What is
6 it?

7 A. It's the vehicle motions. So it would really
8 be the accelerations, both linear and angular, that the
9 vehicle undergoes.

10 Q. Which vehicle?

11 A. The Santa Fe.

12 Q. Alone?

13 A. If we're only interested in Ms. Garcia and
14 her lumbar spine, then it's only her vehicle that
15 matters for the MADYMO analysis, for the lumbar spine
16 analysis.

17 Q. And why is it that this -- that all you need
18 to know for your purposes is -- is speed and the -- the
19 motion this -- this -- this spinning of only her
20 vehicle that was only 180?

21 A. So we don't just need those. We also need
22 vehicle weight, wheel base, friction, things of that
23 nature.

24 Q. But only of hers?

25 A. Well, we need the mass of both vehicles, and

1 we need to know generally where the force is applied to
2 her vehicle. Because if it's applied through the
3 center of mass, we don't get that spin. Because the
4 force is not applied through the center of mass, we do
5 get the spin.

6 Q. And -- and how is it -- what is the
7 determining factor that determines the forces that are
8 imposed upon L5 and S1 of the lumbar spine? Is it how
9 fast Jared was going? The spin of her vehicle? Or
10 something else?

11 A. The speeds actually don't matter at all.
12 It's the accelerations. It's the vehicle motion during
13 the crash impulse as it moves around -- moves sideways
14 and spins.

15 Q. Is the only purpose that you're going to use
16 for this PC-Crash analysis to input force and motion
17 data into the biomechanical analysis, or is it
18 something else?

19 A. Well, I think delta-v gives a good descriptor
20 of accident severity. So I think that is important to
21 discuss, but it's not necessary for the lumbar spine
22 analysis.

23 Q. Okay. And what is necessary for the lumbar
24 spine analysis?

25 A. Just her vehicle motion, Ms. Garcia's vehicle

1 motion.

2 Q. Why?

3 A. Because that's what drives her loads, her
4 motions inside the vehicle, and how her lumbar spine
5 gets loaded because of her motions in the vehicle.

6 Q. And did you have enough known information to
7 calculate the motion of just her vehicle?

8 A. I believe so, yes.

9 Q. What was it?

10 A. What was the information?

11 Q. Yeah.

12 A. So we have the vehicle parameters for her
13 car. We have --

14 Q. Which are?

15 A. Well, it's like the weight, the moment of
16 inertia, the wheel base, friction on the road. I think
17 that's it.

18 Q. Are those particular to Garcia's Santa Fe, or
19 are they generic?

20 A. These are particular to her vehicle.

21 Q. What other information did you need to
22 calculate this?

23 A. The general location of impact on the
24 vehicle.

25 Q. Why was that important?

1 A. I need to know whether the force of the
2 impact goes through the center of mass or if it is
3 distant from the center of mass.

4 Q. Why?

5 A. Because if you have a force that's distant
6 from the center of mass, you have a moment arm. And
7 that force creates a torque that creates rotation.

8 Q. And what determines the amount of the moment
9 arm that creates the amount of rotation?

10 A. The moment arm is just a distance. So it's
11 where the damage is on her vehicle.

12 Q. And were you able to calculate the length of
13 that moment arm?

14 A. Yes.

15 Q. And how did you do that?

16 A. It's part of PC-Crash where I have where the
17 impact occurs on her vehicle.

18 Q. All right. And anything else that you needed
19 to calculate the forces derived from this 180-degree
20 spin? Did you need her speed, for example?

21 A. I think it's important to have a range
22 because the vehicle dynamics will change if we -- if
23 she's going 90 miles per hour versus 10 miles per hour.
24 But we don't need to know exactly what her speed is.

25 Q. And is that because the forces are determined

1 by this angular momentum quantity which is determined
2 by the motion in 180 degrees?

3 A. The angular accelerations start the rotation.

4 Q. And that's determined by the mass of the
5 vehicle?

6 A. Partly. But it's moment of inertia.

7 Q. Okay. And explain to us the quantities that
8 go into calculating moment of inertia. And prove to us
9 that you had that information; it wasn't just guessing.

10 A. So moment of inertia is like rotational mass.
11 And just like you would -- mass is a resistance to
12 motion when you apply a force, because force equals
13 mass times acceleration.

14 When you apply a torque to something --
15 torque equals $I \alpha$. "I" is the moment of inertia.
16 So it's kind of like the mass. Mass equals MA . And
17 α is angular acceleration, which is like
18 acceleration.

19 Q. Is that it?

20 All right. I have drawn on this board a
21 vehicle of Ms. Garcia -- this is Ms. Garcia's vehicle
22 here. This is the rotational center of the vehicle.
23 This is the location of impact. This is the resulting
24 motion, 180-degree rotation around this moment arm.

25 Do you see that?

1 A. I do. It's not quite right, but it's close.

2 Q. All right. To derive the force and motion
3 inputs that you need for the MADYMO biomechanical
4 analysis, did you need anything more than just what
5 I've drawn here?

6 Do you want to come down here and show it?

7 A. No. That's all right. No. I think the --
8 I'd just change your moment arm because you have it at
9 an angle. And the way you've drawn it there, it should
10 be perpendicular.

11 Q. Here. Let's get it right.

12 A. Okay. To answer your other question, again,
13 vehicle-specific parameters are important. So it's
14 more like that (witness indicating). The moment arm is
15 going to be perpendicular to the force.

16 Q. All right. Let's do it -- Doctor, here.
17 Let's do it -- let me get this right. Okay.

18 Is this -- this would be the center
19 rotation --

20 A. Sure.

21 Q. -- of the vehicle?

22 And that's important; right?

23 A. That is.

24 Q. Okay. And then the location impact would be,
25 like, here?

1 A. Sure. I would put it here, but yeah.

2 Q. Okay. And that's the location of impact on
3 the vehicle.

4 And then the moment arm, how would that be?

5 A. You draw that -- so if this is the force
6 applied to the vehicle, then it would be like that.

7 Q. Okay. And the vehicle has a speed vector;
8 right?

9 A. Right.

10 Q. And it has a motion, this 180 degrees to
11 where it stopped; right?

12 A. That's right.

13 Q. Is there anything else that you needed to
14 derive the inputs for force and motion that you needed
15 for your biomechanical analysis?

16 A. Besides the vehicle-specific parameters and
17 friction?

18 Q. Put them here. Write them down.

19 As to just her vehicle, what did you need?
20 Write big.

21 A. Mass --

22 Q. Bigger. Okay. Go ahead.

23 A. -- moment of inertia, friction --

24 Q. That's the coefficient of friction?

25 A. Uh-huh.

1 -- wheel base.

2 Q. Anything else?

3 A. Actually, the location of -- and the size of

4 the vehicle, tire-track width. All the

5 vehicle-specific information is important to this.

6 Q. Did you have that too?

7 A. Yes.

8 Q. All right. And you had the -- the

9 calculation of the exact moment of rotation; right --

10 or the center of rotation?

11 A. Correct.

12 Q. And is there anything else that you needed to

13 perform this PC-Crash calculation of force and motion?

14 A. In what I did, I also included occupant

15 weight in the location of the driver's seat. So that's

16 included there too.

17 Q. Anything else that you need -- you absolutely

18 had to have for your calculation?

19 A. Not that I can think of, no.

20 Q. All right. And so what you're calculating

21 here is the force and the motion of the vehicle, and

22 then you input that into your biomechanical analysis to

23 calculate the force and the motion on her spine; right?

24 A. That's correct.

25 Q. Okay. Now, did the -- why is it that it

1 didn't matter to you whether the resting location of
2 the vehicle was where the witnesses said?

3 MR. ROBERTS: Objection. Inconsistent with
4 his report.

5 BY MR. STRASSBURG:

6 Q. Well, did it matter?

7 A. Did it matter that the vehicle was not in the
8 lane?

9 Q. Yeah.

10 A. It wouldn't matter to my analysis, no.

11 Q. Why not?

12 A. Because I'm interested in the rotation and
13 lateral motion during the impact. And the portion when
14 the car is further down the street at a slow speed,
15 there's not much acceleration, it doesn't matter to the
16 loads on the lumbar spine.

17 Q. Would it matter how fast that Awerbach was
18 going when he hit her if you assume that her vehicle
19 only spun 180 degrees and stopped?

20 A. So his speed is only important in the sense
21 that it applies a force -- his vehicle contact applies
22 a force to her vehicle. Her vehicle motion wouldn't
23 matter if he, you know, was going 20 miles an hour or
24 10 miles an hour if the force were the same. The force
25 is what's important.

1 Q. And --

2 A. That's from -- sorry.

3 Q. And how do you derive that force?

4 A. That's the iterative process. Because if you
5 have a force that's too large in the location of
6 impact, then it's going to spin the vehicle more than
7 180. If you have a force that's too small at the
8 location of impact, it's not going to rotate far
9 enough.

10 Q. And does the amount of deformation of her
11 vehicle have anything to do with calculating that force
12 exerted by his?

13 A. It's a check.

14 Q. Explain.

15 A. Well -- so it's not necessary for calculating
16 the motions of her vehicle, but I want to make sure
17 that it's consistent with the facts that we have. And
18 so the damage to the vehicle is -- it would require a
19 force that is ten times larger, because there's that
20 much more crush, then it would tell me I'm wrong.

21 In this particular case, the crush energy,
22 the amount of force it takes to crush her vehicle,
23 matches up well with the vehicle spinning the
24 180-degrees.

25 THE COURT: Tom, would you go talk to the

1 jurors and make sure that they know that we're still in
2 here. It's going to be a little bit.

3 THE MARSHAL: All right.

4 THE COURT: Thank you.

5 Sorry to interrupt.

6 BY MR. STRASSBURG:

7 Q. All right. So is your utilization of these
8 physical principles and the data regarding the
9 180-degree spin, the vehicle-specific data of her car,
10 the crush deformation that you had, was that sufficient
11 under the generally accepted principles of
12 biomechanical engineering and accident reconstruction
13 to determine the two parameters, force and motion, for
14 this accident that you needed to input into your
15 biomechanical analysis to figure it out on a spinal
16 level?

17 MR. ROBERTS: Objection. Inconsistent with
18 his report.

19 THE COURT: I'm going to let him say it.

20 THE WITNESS: So the one thing I would
21 correct is it's the motion of the vehicle that goes
22 into the biomechanical analysis, not even the force.
23 It's the motion that's created.

24 Yes. Thank you.

25 /////

1 BY MR. STRASSBURG:

2 Q. All right. And what determines that motion?

3 A. Everything that we've been talking about.

4 Q. All right. So it's just -- the main factor
5 is this spin of 180 degrees; right?

6 A. That's right.

7 Q. If it had been 360 degrees, that would have
8 been totally different?

9 A. That's correct.

10 Q. If it would have been 480 degrees, that would
11 have been totally different?

12 A. That's true.

13 Q. All right. So it sounds like you knew
14 everything that you absolutely needed to calculate
15 motion; right?

16 A. I believe so, yes.

17 Q. And --

18 A. I should say within a range.

19 Q. And what was your margin of error for what
20 you -- what you actually knew to put into this
21 calculation?

22 MR. ROBERTS: Objection. Beyond the scope of
23 his report.

24 THE COURT: I'm going to let him say it for
25 now.

1 THE WITNESS: So what I did was actually gave
2 the upper bound in my report. But if you look at it
3 and you look at my file, I think that I gave a
4 particular analysis and then a plus-or-minus range on
5 that.

6 And so, for example, for Jared's vehicle,
7 Mr. Awerbach's vehicle, it's probably around 20 miles
8 an hour, maybe down to 18, maybe up to 22.

9 BY MR. STRASSBURG:

10 Q. Does it matter?

11 A. It does not.

12 Q. Why not?

13 A. Again, what matters is the motion of the
14 Santa Fe.

15 Q. Because that determines the motion of the
16 vehicle that goes into the biomechanical analysis;
17 right?

18 A. That's correct.

19 Q. Okay. And so what -- it sounds like what
20 you're saying is is that this impact had a rotational
21 component and a magnitude component, right, a lateral
22 component?

23 A. That's true.

24 Q. And they tended to counteract each other?

25 A. That's true, with the occupant motion.

1 Q. All right. And that's all that you
2 calculated for PC-Crash purposes, right, this motion?

3 A. That's right.

4 Q. And it didn't matter where the cars ended up?

5 A. That's true.

6 Q. Didn't matter where Awerbach started from?

7 A. May I explain why it doesn't matter?

8 Q. Yeah, I wish you would.

9 A. Okay. So when you have the vehicle rotating
10 180 degrees, if you have a small steering input on the
11 Santa Fe, at the end of the accident when the forces,
12 the motions are slow -- on the vehicle, the forces were
13 low on her vehicle -- it will drift back into her lane.
14 And that was in my file. I think it's in "analysis,"
15 the "PC-Crash folder" under "4" -- and there's a dash
16 or an underscore or, like "steering input" or something
17 like that.

18 And basically it shows that, with a small
19 steering input, the motions -- the vehicle motions --
20 overall that are important for MADYMO are the same.
21 It's just, at the very end, her car drifts back into
22 her original lane as opposed to staying on the other
23 side of the street.

24 Q. Okay. So the steering inputs, when -- when
25 the vehicle responds to -- under control of the

1 steering wheel, right, that is not important for your
2 analysis?

3 A. Not at the end of this accident. That's
4 right.

5 Q. And those are -- those are what determine
6 where the vehicles end up in their rest location. Yes?

7 A. That's correct.

8 Q. What you're interested in calculating is the
9 motion while the vehicle is out of control; right?

10 A. The impact portion. That's right.

11 Q. And that's determined by the laws of physics
12 based on the fact that a vehicle of this weight and
13 mass described this motion of 180 degrees; right?

14 A. That's right.

15 Q. Now, why doesn't it matter where our back
16 started out?

17 A. Again, it's whatever force at the impact
18 location on the Santa Fe is necessary to rotate her
19 vehicle around.

20 Q. And how did you -- and you back-figured that
21 force based upon what force would be required to deform
22 Garcia's vehicle in the way you observed; right?

23 A. No. That was a check.

24 Q. Okay. How did you calculate it?

25 A. So it's, again, based on the vehicle

1 parameters, the laws of physics, and the damage
2 location on her vehicle. That gives what the force has
3 to be to rotate her vehicle around during the impact.

4 Q. So that's what describes this moment arm?

5 A. The damage location describes this moment
6 arm. That's right.

7 Q. All right. And that -- the moment arm is
8 like a lever that it takes to rotate this mass
9 180 degrees to this location; right?

10 A. The moment arm is what creates the torque
11 about the center of mass from the force that's applied
12 at the damage location to the Santa Fe.

13 Q. All right. Did you have objective, reliable
14 evidence for every factor shown on this board that you
15 needed to calculate the motion of the vehicle that you
16 would input into your biomechanical analysis?

17 A. I believe so, yes.

18 Q. You didn't have to guess at any of it?

19 A. No.

20 Q. You didn't have to extrapolate any of it?

21 A. No. I did have to solve equations through an
22 iterative process.

23 Q. An iterative process determined by the laws
24 of physics?

25 A. That's correct.

1 Q. Okay. Let me just make sure that I ...

2 In -- in -- in biomechanical engineering,
3 which is deemed more reliable proof, eyewitness
4 statements of people involved in a hair-raising
5 accident or the product of the analysis of physical
6 forces applied to known parameters?

7 A. I always rely on objective evidence with more
8 weight than testimony, but both are important.

9 Q. Now, there's a concern that you had no way of
10 knowing from the photographs the amount of damage
11 that's underneath the sheet metal.

12 Was that important for your purposes?

13 A. No. The crush analysis portion, again, is a
14 check on the vehicle motion that we just talked about
15 through PC-Crash. But it is very interesting that it's
16 consistent. If you look at the force it takes at the
17 damage location to rotate the Santa Fe through
18 180 degrees and then you do the crush analysis, they
19 match up very well.

20 Q. For the purposes of the analysis shown on
21 this board, was -- the angle of impact, was that
22 important and determinative of what you were
23 calculating here?

24 A. The general angle is important but not the
25 specific angle.

1 Q. What do you mean by that?

2 A. Well, again, a range of reasonable angles.

3 It can't be, in your drawing, straight up and down on

4 the passenger side. It's not a sideswipe. There's

5 going to be a component into the vehicle and a

6 component rearward on the vehicle because of the nature

7 of the accident.

8 Q. But what determines your calculations is the

9 fact that this vehicle describes this half circle of

10 motion and comes to a rest; right?

11 A. That's right.

12 Q. So really whether the repair records show,

13 you know, \$1,000 of damage or \$1,500 worth of damage,

14 it's not really relevant to your calculation so long as

15 they don't show \$10,000 worth of damage that's grossly

16 out of the line; right?

17 A. So I wouldn't use dollar values, but I would

18 use crush energy or force. But yes, that's the right

19 idea.

20 Q. So for purposes of assisting the Court in

21 determining whether your calculations are reliable, for

22 purposes of what you needed to calculate this motion

23 input for the biomechanical, were your calculations

24 under the standards applicable in accident

25 reconstruction generally accepted and peer reviewed?

1 Were your calculations proper?

2 A. They were.

3 Q. Were they reliable?

4 A. Yes.

5 MR. ROBERTS: Objection to the peer review of
6 his calculations. That's certainly not in his report.

7 BY MR. STRASSBURG:

8 Q. No, no, no. It's peer review of the method
9 that you used for your calculations.

10 Did you use a peer-reviewed valid method for
11 calculating this motion that you inputted into your
12 biomechanical analysis?

13 A. Yes.

14 Q. And was that calculation based upon objective
15 information that was particularized to this particular
16 motion by this particular vehicle?

17 A. Yes.

18 Q. And for the motion that you utilize, does
19 your methodology result in a value that has a
20 recognized, tested, validated margin of error in the
21 scientific literature?

22 A. I'm sorry. One more time?

23 MR. ROBERTS: Objection. Incomplete
24 hypothetical. No foundation.

25 THE COURT: Ask it again.

1 MR. STRASSBURG: What?

2 THE COURT: Try again.

3 BY MR. STRASSBURG:

4 Q. Okay. Does this method that you utilized
5 here to -- to calculate the motion involved here and
6 what it implied, does that employ -- did you employ a
7 method that is recognized as scientifically valid in
8 your discipline of biomechanics?

9 A. Yes.

10 Q. Based upon peer-reviewed studies validating
11 this calculation?

12 MR. ROBERTS: Objection.

13 BY MR. STRASSBURG:

14 Q. I'm sorry. Peer-reviewed studies validating
15 the method that you utilized to calculate this
16 particular motion for this particular vehicular motion.

17 A. Yes.

18 Q. All right. Now, delta-v -- was delta-v
19 critical for your -- your calculation of this motion
20 input for the MADYMO?

21 MR. ROBERTS: Objection to form.
22 Incomprehensible.

23 THE COURT: I'm going to allow it.

24 THE WITNESS: The actual calculation of
25 delta-v is not critical.

1 BY MR. STRASSBURG:

2 Q. Explain.

3 A. Well, the delta-v does not go into the
4 biomechanical analysis section. What we're interested
5 in is the motion of the vehicle. We happen to get that
6 as a byproduct, but it's not critical.

7 Q. Okay. Has this methodology to calculate the
8 motion involved in an accident of this movement, has it
9 been tested in scientific literature?

10 A. That is the balance of linear and angular
11 momentum, conservation of energy, yes.

12 MR. STRASSBURG: Judge, based upon his --
13 again, his explanation of his testimony, I'd again
14 plead with you to reconsider your ruling on -- that
15 this does comport with Hallmark. Once you understand
16 that -- that this calculation that he performed is --
17 it's maybe not what you're used to from other cases.
18 It doesn't depend upon rest locations and witness
19 statements because its purpose is limited. It's
20 more -- it's different.

21 It's to calculate an input into the next step--
22 in the analysis, an input that is determined by a -- a
23 half-circular rotation of a vehicle of this size and
24 weight.

25 MR. MAZZEO: Excuse me. I have a couple of

1 questions of the doctor.

2 THE COURT: I'm sure you do. I'm sure he
3 does too.

4 Tom, can you take this -- go admonish the
5 jurors and tell them to come back at 8:30 tomorrow
6 morning.

7 Go ahead, Mr. Mazzeo.

8 MR. STRASSBURG: Judge, can I mark this as an
9 exhibit, what we've been looking at?

10 THE COURT: What's next in order?

11 THE CLERK: You want it as a court's exhibit
12 or --

13 THE COURT: A court exhibit. It's not going
14 to go to the jury.

15 THE CLERK: It will be 8.

16 THE COURT: Go ahead, Mr. Mazzeo.

17 MR. MAZZEO: Thank you, Judge.

18

19 VOIR DIRE EXAMINATION

20 BY MR. MAZZEO:

21 Q. Dr. Scher, how many PC-Crash analysis
22 evaluations have you performed in your career?

23 A. I don't know. Maybe in the ballpark of 250.

24 Q. And have you ever been -- have any of your
25 PC-Crash analysis tests been deemed inadequate in any

1 court of law?

2 A. Not that I know of, no.

3 Q. Okay. And in this case, did you have all the
4 necessary data to perform the PC-Crash analysis test?

5 A. I believe so.

6 Q. And so I just want to ask you some questions
7 about the relative importance or the significance of
8 certain information that's been discussed.

9 What was -- what is the significance of the
10 vehicle specifications with respect to the PC-Crash
11 analysis testing?

12 A. The vehicle specifications will determine the
13 dynamics of the motion of the vehicle upon impact.

14 Q. So and -- you had those -- and that's -- so
15 that's something -- that's -- that's -- that's data
16 that is important with respect to the analysis?

17 A. I believe so.

18 Q. Okay. Well, more than just your belief, is
19 it something that's used in your -- in accident
20 reconstruction to -- for this PC-Crash analysis?

21 A. Yes.

22 Q. Okay. And what is the significance of the
23 area of initial contact for the PC-Crash analysis?

24 A. It gives us, again, the moment arm for
25 rotation about the center of mass from the force of the

1 department.

2 Q. And there is -- has been some discussion
3 about the -- about the -- your diverting from the AIC,
4 or the area of initial contact, that was identified in
5 the traffic accident report which -- it's on
6 Plaintiff's Exhibit 2, page 1 -- or page 2, where the
7 investigating officer had noted 100 N/S, 27 W/E.

8 Why did you diverge from the -- from the
9 notation indicated by the investigating officer?

10 A. If I may, the accident report that I'm
11 looking at says, "The accident occurred" -- there's a
12 little check box next to No. 2. It says "or," and then
13 it has a check box next to 3. It says "feet," and then
14 a check box next to No. 5 that says "approximate" along
15 that line. So it says "north of Peak Drive," and it
16 does say "approximate."

17 What was more important to me was the
18 testimony that Mr. Garcia -- I'm sorry. Mr. Awerbach
19 was coming out of Villa Del Sol, and that driveway or
20 exit from the parking lot is 200 or so feet from the
21 intersection. The police officer put 100. It was
22 probably closer to 200. But it's the right area.

23 Q. And how did you determine that it was 200
24 rather than 100?

25 A. From Google Earth, so satellite imagery.

1 Q. Okay. And -- now, what is the significance
2 of the angle of impact between the relative vehicles
3 involved in this accident?

4 And, secondly, do you need to know the
5 precise angles or the general angle?

6 MR. ROBERTS: Objection. Asked and answered.

7 THE COURT: I'm going to let him go.

8 THE WITNESS: We need the general angle
9 within a range, which we had. We don't need the
10 precise angle.

11 BY MR. MAZZEO:

12 Q. And how did you know the general angle?

13 A. From the damage to the vehicles and
14 descriptions of the accident.

15 Q. Okay. Now, is -- can you tell us something
16 about how photogrammetry has an impact on -- or any
17 relevance of photogrammetry with respect to PC-Crash
18 analysis?

19 A. It doesn't.

20 Q. Okay. Thank you. And what is the
21 significance of the resting position for your PC-Crash
22 analysis?

23 A. As I mentioned earlier, it's variable
24 depending on the steering input after the main part of
25 the impact. So it's immaterial for my analysis.

1 What's most important is the rotation of Ms. Garcia's
2 vehicle.

3 Q. Okay. And -- and also, Dr. Scher, with
4 respect to the area of initial contact, what we're
5 talking about when -- when -- and you cited that, and
6 it's -- I don't have the -- it's okay. I don't need
7 it.

8 THE COURT: I can give it to you if you want.
9 BY MR. MAZZEO:

10 Q. Okay. So this is Plaintiff's 1, page --
11 Exhibit 2, page 1. And I think what you were referring
12 to, Doctor, is the traffic accident report in the box
13 under "occurred on."

14 Do you see that?

15 A. I do.

16 Q. And this is what you were citing?

17 A. That is.

18 Q. The --

19 A. That's correct.

20 Q. Okay. 100 feet approximately north of Peak
21 Drive; right?

22 A. That's right.

23 Q. Okay. So when we're talking about the area
24 of initial contact, just so there's no confusion, we're
25 not talking about the points of contact between the two

1 vehicles; we're talking about the contact in the
2 roadway between the two vehicles?

3 A. The location on the roadway where the
4 accident occurred.

5 Q. Okay. With respect to the points of contact,
6 that's important for your PC analysis; correct?

7 A. Where the vehicles touched, do you mean?

8 Q. Yes.

9 A. Yes, it is.

10 Q. And how did you determine that?

11 A. From the damage to the vehicles that was
12 apparent in the pictures and the repair estimate.

13 Q. Okay. Thank you.

14 MR. MAZZEO: And then, Judge, I also want
15 to -- I mean, I can wait until the end, but I want to
16 cite -- refer you to the case of Provence v.
17 Cunningham, 95 Nev. 4, where photographs per se are not
18 invalid as a basis for expert testimony in accident
19 reconstruction cases.

20 And I'll wait. I guess there's going to be
21 an argument at the end?

22 THE COURT: I can't go past 5:00 today. So
23 you guys are a little limited on time.

24 MR. MAZZEO: Okay.

25 THE COURT: Mr. Roberts?

1 MR. ROBERTS: Thank you, Your Honor.

2

3

VOIR DIRE EXAMINATION

4 BY MR. ROBERTS:

5 Q. Dr. Scher, could you direct us to the place
6 in either one of your reports where you say that the
7 only thing that matters is the rotation of Ms. Garcia's
8 vehicle?

9 A. I don't say the only thing that matters is
10 the rotation of the vehicle.

11 Q. And just so we're totally clear for the Court
12 on the conclusions that you would like to offer to the
13 jury, the first thing you said you did was the PC-Crash
14 analysis; right?

15 A. The first thing is the accident
16 reconstruction analysis overall.

17 Q. Right. Okay. Using PC-Crash.

18 A. PC-Crash is part of that, yes.

19 Q. And -- and here -- here are the notes that
20 your counsel wrote down when he was asking you what had
21 to go into PC-Crash in order to get delta-v.

22 MR. STRASSBURG: Objection.

23 BY MR. ROBERTS:

24 Q. And you told --

25 MR. STRASSBURG: I don't represent him.

1 BY MR. ROBERTS:

2 Q. You told him speed --

3 MR. ROBERTS: I'm sorry, Your Honor.

4 THE COURT: Yeah, you said "your counsel," so
5 that's true.

6 BY MR. ROBERTS:

7 Q. Okay. This is what you told --

8 THE COURT: Just say, these are the answers
9 that you gave to Mr. Strassburg.

10 MR. ROBERTS: Yes.

11 BY MR. ROBERTS:

12 Q. Who hired you in this matter?

13 A. Mr. Strassburg.

14 Q. Who do you send your bills to?

15 A. Mr. Strassburg.

16 Q. Who pays it?

17 MR. MAZZEO: Beyond the scope of voir dire.

18 BY MR. ROBERTS:

19 Q. So Mr. Strassburg asked you what had to go
20 into PC-Crash, what was important. You told him speed;
21 correct?

22 A. I did.

23 Q. And you told him angles; correct?

24 A. That's right.

25 Q. And you told him vehicle specs; right?

1 A. That's right.

2 Q. And you want to know the mass of the vehicle;

3 right? And the wheel base and the center of gravity,

4 all that stuff?

5 A. That's right.

6 Q. So you plugged all this into PC-Crash, and

7 one of the things you get out of PC-Crash is delta-v;

8 right?

9 A. That is a result, yes.

10 Q. And this is delta-v of Ms. Garcia's vehicle;

11 correct?

12 A. Actually both vehicles, but yes.

13 Q. But what -- what you used in your conclusion

14 was the delta-v of Ms. Garcia's vehicle; right?

15 A. That is one of my conclusions, yes.

16 Q. Okay. And you concluded it could be no

17 greater than 9; right?

18 A. That was the upper bound, correct.

19 Q. Okay. So another one of the drawings. Okay.

20 So Ms. Garcia's vehicle is traveling along.

21 A. I think there's a newer version.

22 Q. Is there? Okay.

23 MR. STRASSBURG: That's Court Exhibit 8.

24 MR. ROBERTS: Oh, did you tear it off?

25 MR. STRASSBURG: Yeah, I gave it to the

1 Court.

2 THE COURT: I have clips for you.

3 MR. ROBERTS: Got two, Your Honor. Audra
4 beat you.

5 THE COURT: You got some?

6 MR. ROBERTS: Yes.

7 BY MR. ROBERTS:

8 Q. Okay. I have got now Court's Exhibit 8. Is
9 that right? So Ms. Garcia's vehicle is traveling this
10 way; right?

11 A. Down on the page, that's right.

12 Q. Okay. She's traveling southbound. And if
13 she's going 30 miles an hour, that's her velocity. But
14 there's no delta-v at this point as long as she's not
15 accelerating or decelerating or moving laterally;
16 right?

17 A. That's right.

18 Q. So now Mr. Garcia's -- excuse me.

19 Mr. Awerbach's vehicle hits her. And the delta-v that
20 you're calculating is caused by Mr. Awerbach's vehicle;
21 right?

22 A. By the contact with it, yes.

23 Q. By the contact with it. Energy from
24 Mr. Awerbach's vehicle is transferring to Ms. Garcia's
25 vehicle and causing it to accelerate.

1 A. I would agree with that.

2 Q. Okay. And the reason you need to know the
3 mass is the amount of energy Mr. Awerbach's vehicle
4 has, one component is mass and another component is
5 velocity; right?

6 A. That's true.

7 Q. So the more -- assuming the exact same angle
8 of impact, the greater the speed, the higher the
9 delta-v; right?

10 A. In general, yes.

11 Q. Assuming the same speed, the higher the
12 angle, the less delta-v; right?

13 A. The delta-v direction will change, but maybe
14 not the magnitude.

15 Q. Okay. Thank you. That is more accurate.
16 So in this case, before you even get to -- to
17 MADYMO -- did I say that correctly?

18 A. I believe so.

19 Q. Okay. And that's Mathematical --

20 A. Dynamic Model.

21 Q. Thank you. Mathematical dynamic model.
22 In your report of August 21st of 2014, you
23 provide national weighted estimates and percent of
24 restraint far-sided occupants injured in lateral
25 impacts with a delta-v between 5 and 10 miles an hour,

1 characterized by severity; right?

2 A. Let me pull that up. You're looking at
3 which?

4 Q. I'm looking page 17 of your
5 August 21st, 2014, report.

6 A. Page 17. Bear with me.
7 I'm there.

8 Q. Okay. So you look at some data from
9 recognized sources, and you determine that, for
10 delta-v's between 5 and 10, here are the reported
11 injuries and reported injuries to the lumbar spine of
12 two severities; right?

13 A. Yeah. There's more to it. So these are
14 lateral impacts, single collisions. There's not
15 multiple collision. These are far-side occupants. So
16 there's more to it than just that. But, yes, the
17 tables in here and the text describes it.

18 Q. And then you give the conclusion that "Based
19 on the NASS/CDS data, it is unlikely that an individual
20 would sustain AIS 2+ lumbar spine pathologies from an
21 accident similar to the subject accident."

22 And the things that make it similar are
23 lateral impact; right? Which is undisputed?

24 A. That's right.

25 Q. Far-sided, which undisputed, and delta-v;

1 right?

2 A. Those are all true.

3 Q. So one of the fundamental opinions you want
4 to give is solely based from -- at least from a
5 disputed standpoint, on delta-v; right?

6 A. No. So this is a check on the biomechanical
7 and engineering analysis portion. And this actually
8 comes in as a way of looking at delta-v's overall and
9 injury likelihood. And so some of these may be pure
10 lateral impacts and no rotation; some may have
11 rotation. But the point being that, with or without
12 it, we have zero cases with lumbar spine AIS 2+
13 injuries.

14 Q. Right. And the database you used is delta-v
15 between 5 and 10.

16 A. That's part of the query.

17 Q. And in this case you've calculated a delta-v
18 of 9 using PC-Crash; correct?

19 A. 9 is the upper bound.

20 Q. Right. So let's assume that we changed a few
21 of these things around a little bit and we got an upper
22 bound of 11. Then this table would no longer apply;
23 right? We'd have to look at different data.

24 A. I could do that, sure. Yes.

25 Q. So then what you told the Court is that you

1 took other data from your PC-Crash simulation and put
2 it into MADYMO?

3 A. The output of PC-Crash into MADYMO.

4 Q. Right. And so this is very detailed output
5 from PC-Crash that goes into your biomechanical
6 program; right? And let's take a look at it. We don't
7 have to -- to argue about semantics.

8 What you put into MADYMO was X, Y, and Z
9 position and yaw, pitch, and roll rotation of the
10 vehicles during the duration of the accident; right?

11 A. That's correct.

12 Q. And so it's not just the rotation of the
13 vehicle that's important to you and that you entered
14 into MADYMO; it's how fast the vehicle rotates around;
15 right? Rotation by time.

16 A. Sure. All of these are time histories, of
17 course.

18 Q. And this is your Attachment D. And all of
19 this information that you put into MADYMO is the output
20 from PC-Crash after you enter speed, angle, and all of
21 the other things that you told Mr. Strassburg.

22 A. This is output, that's correct.

23 Q. Okay. And then MADYMO calculates sheer
24 forces on the spine; right?

25 A. It does.

1 Q. Okay. And you calculated an axial force or
2 compressive force; right?

3 A. Right. So let's be clear there is a force
4 that has components in different directions.

5 Q. And the two you mentioned in your report as,
6 in your words, most significant were the compressive
7 axial force and the shear force.

8 A. That's right.

9 Q. And in your report you show the shear force
10 going perpendicular to the -- to the body; right?

11 A. I show an anterior-posterior force.

12 Q. Right. And the force of the accident being
13 balanced by the force of the ligaments in the muscles
14 and the skeleton?

15 A. Not sure what you mean. Sorry.

16 Q. Force from the accident, resistive force of
17 spine, ligaments, and muscles.

18 You prepared this; right? It's part of what
19 you want to tell the jury?

20 A. I did, yes.

21 Q. And then what you want to tell the jury is --
22 and this is page 65 of the PowerPoint that's been
23 provided -- here is your occupant motion rotation only,
24 and it shows that the occupant would experience a force
25 making it go over toward the door of the vehicle;

1 right?

2 A. That's right. A rotational motion of the
3 vehicle creates an outward motion for the occupant.

4 Q. Okay. And that would be a different type of
5 force than you think happened in this case; right?

6 A. No, I think that's present in this case.

7 Q. The force from side to side?

8 A. There is some small shear force laterally.
9 It's provided in my file. But as you can see, it's
10 very small.

11 Q. Right. And reason that you say it's small
12 and are going to tell the jury it's small is because in
13 this case we've got rotational force which counteracts
14 the lateral -- the -- the lateral force counteracts the
15 rotational force; right?

16 A. It's close enough, yes. It's not quite how I
17 would say it, but sure.

18 Q. Okay. And -- and then I think there's some
19 slides in here where you actually show those two forces
20 as counteracting in addition to the slide I just
21 showed.

22 A. That's right.

23 Q. Now, in your reconstruction from your
24 PC-Crash input, you have Ms. Garcia's vehicle going
25 from the No. 1 travel lane going south, across the

1 median, and over into the No. 1 northbound lane; right?

2 A. In the animation that I showed, yes.

3 Q. Okay. And you would agree that it takes

4 lateral force to move the vehicle from one side of the

5 road over to the other side of the road.

6 A. Sure.

7 Q. And if the vehicle is staying in its lane,

8 you've got more rotational force, and it's not being

9 offset by the lateral force the way your calculations

10 show.

11 A. Yeah. That would be physically impossible

12 from what you described. It has to move laterally.

13 And the only way it could get back into its original

14 lane would be with the steering input that I mentioned

15 earlier at the end of the accident sequence.

16 Q. So based on your calculations and the

17 assumptions you've made about angles of impact, it has

18 to move laterally?

19 A. Based on the laws of physics.

20 Q. Let's talk about crush for a minute. You

21 would agree that there are no pictures or photographs

22 you reviewed looking down from the top of the vehicle;

23 right?

24 A. That's true.

25 Q. And so you attempted to use photogrammetry to

1 estimate crush; is that right?

2 A. That's right.

3 Q. And in your report you said that, since you
4 couldn't actually go out and measure the crush, you had
5 to come up with a range?

6 A. That's right.

7 Q. And you overstated that range; correct? You
8 overestimated crush as a conservative measure?

9 A. That's right.

10 Q. Would you agree with me that, in order to
11 conserve energy, as you have talked about doing in the
12 laws of physics, that you've got a certain amount of
13 energy that goes into an accident -- a collision, and
14 those energies on one side have to equal the total
15 energies on the other side?

16 A. You mean before and after the impact?

17 Q. Correct.

18 A. That's correct.

19 Q. So if there's more crush, there's less
20 delta-v of Ms. Garcia's vehicle, because more of the
21 energy, holding speed constant, angles constant, more
22 crush equals less delta-v?

23 A. In general that's the right idea. In the
24 number ranges that we're talking about, it makes a very
25 minor impact. No pun intended.

1 Q. Mr. Garcia's vehicle was damaged on the
2 passenger side; correct?

3 THE COURT: Ms. Garcia or Mr. Awerbach's?

4 MR. ROBERTS: I'm sorry, Your Honor. It gets
5 that time of day; I start misstating everything.

6 BY MR. ROBERTS:

7 Q. Mr. Awerbach's vehicle was damaged on the
8 passenger side; right?

9 A. That's correct. The passenger side of the
10 front -- I'm sorry. It's front damage, more on the
11 passenger side.

12 Q. Okay. So -- so you've got his vehicle. The
13 angle goes like this; right?

14 A. Not sure which way is front on your paper for
15 the vehicle.

16 Q. Okay. If this is Mr. Garcia's vehicle --

17 A. Why don't we use -- can we use something else
18 where -- something that's more directional?

19 THE WITNESS: Can we use the tissue box, Your
20 Honor?

21 THE COURT: How about this?

22 MR. ROBERTS: Okay.

23 THE WITNESS: Thanks.

24 MR. ROBERTS: Thank you.

25 /////

1 BY MR. ROBERTS:

2 Q. All right. So the spine is the front of the
3 vehicle. You got Mr. Awerbach coming in like this, and
4 then you got him turning left; right?

5 A. Correct.

6 Q. Assuming Ms. Garcia's going straight down the
7 road, the vehicle -- the damage to Mr. Garcia's vehicle
8 would be on the driver's side; right?

9 MR. SMITH: Mr. Awerbach.

10 BY MR. ROBERTS:

11 Q. Mr. Awerbach's vehicle would be on the
12 driver's side. So if Mr. Awerbach turns left as you
13 state, the -- and Ms. Garcia's parallel, the damage is
14 going to be on the driver's side; right?

15 A. If you angle it in like that, sure. But if
16 you have the contact -- may I?

17 Q. Sure.

18 A. Okay.

19 If you have the contact coming in like this,
20 and she's swerving this way (witness indicating) -- and
21 I am pointing -- she is driving down the street swerved
22 to the left. So on the paper she's going to the right.
23 He's coming in this way, to the right on the paper.
24 And, remember, there's contact with the wheel. And
25 that's contacting the driver's side of his vehicle.

1 The wheel rotates around as she's moving out
2 this direction. That would account for the scuffs, the
3 marks that we see on the bumper of the Forenza, and it
4 matches up well with how the impact that actually
5 created the force on both vehicles.

6 Q. But in order to make that work, you've got to
7 turn Ms. Garcia's vehicle at an angle heading over into
8 the northbound lanes; right?

9 A. A slight degree, which is what she testifies
10 to.

11 Q. Does she testify to what the angle was or did
12 you have to guess at that?

13 A. I wouldn't say it's a guess. I would say
14 we'd --

15 MR. MAZZEO: Objection, Judge. There's
16 nothing in -- in -- in the -- the amount of angle by
17 Ms. Garcia. There's no testimony regarding that.

18 THE COURT: So you didn't want him to testify
19 about it?

20 MR. MAZZEO: Withdrawn.

21 THE COURT: The question was did she testify
22 to what the angle was, or did you have to guess; right?

23 MR. ROBERTS: That was the question.

24 MR. TINDALL: The objection, then, would be
25 vagueness, whether he was guessing about the testimony

1 or guessing about the angle.

2 THE COURT: I'm going to let him answer.

3 THE WITNESS: I used what I thought were
4 reasonable estimates of what it could be.

5 BY MR. ROBERTS:

6 Q. And the reason that you felt your estimates
7 are reasonable is that's the angles that you had to use
8 in order for the rest of your calculations to come up
9 the way you wanted them to; right?

10 A. Well, I wouldn't quite say it like that
11 because I didn't have any way that I wanted them to
12 come up with. What I would say is that, in order for
13 everything to be consistent, it had a very narrow range
14 of angles that she could have turned at. She can't
15 turn 45 degrees and then have the damage to her
16 vehicle, the damage to Awerbach's vehicle, her rotation
17 of 180 degrees match up. It wouldn't work.

18 Q. And -- and, actually, if you read her whole
19 testimony, she says she saw something coming really
20 fast at the corner of her eye and tried to swerve. But
21 as a reconstructionist, you know about
22 perception-reaction time, and you know that she
23 probably didn't have time to turn at all. In the time
24 where she barely saw him out of the corner of her eye,
25 she didn't have 2.5 seconds to perceive and react and

1 input steering motion, did she?

2 MR. MAZZEO: Objection, Judge. Relevance to
3 the scope of inquiry for -- for establishing his
4 credibility for doing the PC-Crash analysis. This --

5 THE COURT: Overruled.

6 THE WITNESS: I think it is possible for her
7 to have initiated a swerving motion.

8 THE COURT: Finish up, Mr. Roberts.

9 MR. ROBERTS: Thank you.

10 BY MR. ROBERTS:

11 Q. And, in fact, her quote from her deposition
12 was, "I thought I could swerve because I did see him
13 coming really fast."

14 MR. STRASSBURG: Page 22.

15 BY MR. ROBERTS:

16 Q. And, finally, you're not telling us that your
17 report is incorrect when it says in two places that you
18 tried to validate your PC-Crash inputs and your
19 simulation by verifying that the final resting place of
20 the vehicle matched the location set forth by the
21 witnesses; right?

22 A. I probably should have been more precise in
23 my language in terms of what I meant by that, and,
24 specifically, it's Ms. Garcia's vehicle rotating
25 180 degrees.