Case No. 78701

In the Supreme Court of Nevada

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Elizabeth A. Brown
Clerk of Supreme Court

MOTOR COACH INDUSTRIES, INC.,

Appellant,

vs.

KEON KHIABANI; ARIA KHIABANI, MINORS, by and through their Guardian MARIE-CLAUDE RIGAUD; SIAMAK BARIN, as Executor of the Estate of KAYVAN KHIABANI, M.D.; the Estate of KAYVAN KHIABANI; SIAMAK BARIN, as Executor of the Estate of KATAYOUN BARIN, DDS; and the Estate of KATAYOUN BARIN, DDS,

Respondents.

APPEAL

from the Eighth Judicial District Court, Clark County
The Honorable ADRIANA ESCOBAR, District Judge
District Court Case No. A-17-755977-C

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PAGES 6501–6750

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especially in northern tier states, where they salt the roads or sand the roads. And you go down the road and in a block or two, you could end up unable to see in your mirrors because bad aerodynamics takes the airflow and, instead of going backward like you would expect along the sides of the bus, in this case it was a meter out, as far as your arm would go. If you stuck a piece of paper out the window, it would blow to the front.

So what this reverse flow does is it takes the spray off the front wheel and puts it on the mirrors. It's also the reason why the windows for the driver and the folks right up in front get covered with debris in these kind of conditions, where ordinarily they would be kept clean.

And our -- bunch of members came to a union meeting just outraged that the agency hadn't solved this problem and were going to part the fleet. And that would be just a nightmare in traffic and all that stuff.

And we talked them into holding off for a month while I got a research project going -- I'd already been looking at it -- and get the company to support that. And we resolved the problem through laboratory experiments, on-the-road experiments, and a modification to the aerodynamics of the vehicle. We

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got that whole airflow going in the correct direction.
Q. Okay. And did you modify the aerodynamics of that vehicle?
A. Yes. Every single one of that particular vehicle was modified in the fleet.
Q. And how did you do that?
A. I started with research. The company had been trying a bunch of pretty wacky-looking stuff. You wouldn't believe so. And it was clear they didn't understand the dynamics.
So I -- I'm a hardcore science junky, so I started doing research on turbulence and found a professor of fluid dynamics who was into this kind of thing. It's called bluff body aerodynamics or blunt objects. And I was reading this work, going, oh, this is terrific. And you just know he's going to be in Duluth or some distant location. He was 8 miles away.
Consulted with him, and he was willing to help. And subsequently the agency paid for his research, and we modeled the flow and created a solution.
Q. And what was that solution?
A. Since we didn't want to modify the structure on these, you know, buses that had been around a while, we used a turning vane. It's kind of like a wing

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that's been warped, and it allows you to turn airflows extreme angles, and it was really elegant. It stayed inside of the width of the side marker lights, so it didn't make the bus wider, and it didn't extend anywhere near as far as the front bumper. And, because this had these wretched big pillars, we could hide this fairly large wing behind the pillar, and it didn't obstruct the driver's vision. And, meanwhile, it moved this whole air mass back. It's -- it was just amazing.

Q. And when did you do this?

A. Unfortunately, I don't know the exact year. It's roughly 2000, but I don't know the exact year.

Q. And who was the -- the aerodynamic person you worked with?

A. Professor Robert Breidenthal, PhD, at the University of Washington.

Q. And this was about 15 years ago?

A. Very roughly, yes.

Q. Now, with regards to the J4500, do you have criticisms of the aerodynamic design of that, that bus?

A. Yes. It shares the same problem. The corners are too square and, as a result, the airflow separates. And this causes a raft of problems, anywhere from excess fuel economy problems, mud debris accumulating on the mirrors, bad air quality inside.

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That low-pressure zone all the way around the front sucks in the exhaust and all sorts of schmutz. That's why drivers have almost twice the COPD of the rest of the population. They have respiratory illness problems. And it's because of the leading-edge suction.

Q. All right. And are there other buses that don't have this same aerodynamic problem?

A. Yes.

Q. Can you give me an example?

A. There are several European designs. And I have photographs. I didn't pay attention to the model names; I paid attention to the shape of the structure. And they're extremely rounded on the front.

Q. Okay. Now, when you investigate a bus-and-bike -- you've investigated other bus-and-bike accidents?

A. Yes.

Q. Okay. And when you do that, do you look at the right -- or the front tire of the bike?

A. It depends on the circumstances. I've only looked at it in regard to transfer evidence where, if the bike comes in at a steep angle, there's transfer of the rubber of the tire to the side of the bus.

Q. Okay. Have you taken a look at the tire in

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the subject bike?

A. Not closely.

Q. Okay. If you did examine it, what would you look for to see if there was transfer evidence?

A. For this, I would actually look at the surface of the bus. And there is no evidence of that contact on that bus. And it's a white bus. It would really show a black rubber mark.

Q. In this case you've looked at the pictures of the bus?

A. Correct.

Q. And you see no evidence of the tire coming in contact with the bus?

A. Correct.

Q. Now, assuming a tire did come into contact with the bus, what, if anything, would happen to the tire?

A. Well, it would be abraded, but it could be hard to tell with the other abrasion of rolling over the surfaces and having braking forces and all that sort of thing.

Q. What is the New Jersey Transit Authority?

A. It's the agency that operates transit in that state.

Q. Okay. And what does that mean?

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A. They operate municipal and express bus service. They operate some rail.
Q. New Jersey is a big state?
A. Correct.
Q. Lots of buses?
A. Oh, yeah.
Q. Okay. Thousands?
A. Thousands.
Q. Okay. Have you had discussions with the New Jersey Transit Authority prior to this case, prior to this accident, about the J4500?
A. We started talking to them in 2015 about the general principles of these blind spot hazards, and it was about, basically, all of the buses they were using.
Q. And what did you tell them about the MCI J4500?
A. I showed them images of the scale of the blind spot associated on the left particularly.
Q. Okay. Did you tell them anything about whether or not this was a dangerous bus?
A. Oh, we were there because it was a dangerous bus.
Q. And "we" being the -- who?
A. Amalgamated Transit Union, along with the agency managers and all the safety people, all that.

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Q. Okay. So you, the union, went to New Jersey and told them this was not a safe bus?

A. Precisely.

Q. Okay. All right. And by "this," I mean the J4500.

A. We were talking in general terms, but this is very representative of exactly what we were talking about.

Q. Okay. Have you discussed the right-side blind spot problem of MCI buses with MCI?

A. Yes.

Q. And can you tell me what that discussion was about?

A. I've come across them at industry conferences. I go to these big conventions that have a lot of buses and that sort of thing, and I've lobbied all of the manufacturers. I go right down the line and talk about the issues in their particular bus and how the safety could be improved and their sales could be improved if they provided a safer product, trying to talk them into getting safer stuff on the road. And that included MCI.

Q. And what did you tell MCI about MCI buses?

A. Well, we've had a rather extensive conversation where we got together and looked through

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the driver's workstation and the issues there. Everything from that dashboard that comes back so you get better sight line, better ergonomics, through going out and specifically looking at the pillar structure and the curvature and what that would do to the airflow and everything from driver vision through the interior air quality and disturbance to people proximate to the bus -- near the bus as it goes by.

Q. And when you talked to MCI, did you actually have a J4500 available?

A. Yeah. We were standing right in front of them.

Q. Did you explain the dash problem to them?

A. Yes.

Q. Did you discuss aerodynamics?

A. On the dash, yes.

Q. Okay. Okay. And has MCI been responsive to your concerns about the safety of MCI buses?

A. They haven't gotten anything on the road. They did consider the issues, along with a descending slight line across the right side of the dash as well.

MR. KEMP: Okay. All right. No further questions, Your Honor.

MR. TERRY: Your Honor, may I have just a few moments before we break?

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Sir, Shane, could you put up the model of the bus that you've been using?

MR. GODFREY: Sure.

MR. TERRY: Oh, do you have it? We got it over here.

CROSS-EXAMINATION

BY MR. TERRY:

Q. All right. Mr. Sherlock, before we break for lunch, I wanted to ask you a few questions about this before I forgot.

Are you an automotive engineer?

A. No.

Q. Are you a mechanical engineer?

A. No.

Q. Are you an engineer of any kind?

A. No.

Q. Have you ever designed a bus?

A. No.

Q. Have you ever considered the design criteria for a bus?

A. A lot.

Q. Okay. Now, here, for example, when you criticize the A-pillar, you said that it should have been rotated.

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Did I understand that correctly?

A. Yes.

Q. Turned 90 degrees?

A. Not 90.

Q. Turned how many degrees?

A. It should be turned so that it's radial with respect to the driver's eyes.

Q. All right. What are the dimensions of the A-pillar?

A. I haven't measured that.

Q. So do you know if it's wider than -- than it is thicker? Do you know what the dimensions of it are at all?

A. It's far wider than the space between your eyes, and that's when it becomes a problem.

Q. Well, is it a square?

A. No.

Q. Or do you know?

A. I know that.

Q. So what is the dimension that we can't see? Is it wider than your eyes?

A. Yes.

Q. Okay. So if you turn it, you're going to put something in front of the bus driver that is wider than his eyes?

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A. Not necessarily. If you engineer it right, visually it goes away.

Q. Now, do you know how much load the A-pillar has to carry?

A. I don't remember the specific number. It's a bunch of sandbags that they put one by one on the roof.

I'm not talking about changing the load-bearing quality or the load-bearing structure.

Q. Well, do you know how much load the A-pillar has to carry?

A. I don't recall the number.

Q. Do you know how much load the A-pillar has to carry that is generated by driving, the lateral forces when you turn? when you stop? when you start?

A. I don't believe that's tested and -- or specified. And I'm not talking about changing the frame structure that supports those loads. And you're going to take that same frame element and just rotate it a little bit.

Q. Yes, sir. But the question is do you know how much load the A-pillar has to carry?

A. No. It's specified in the white book. I don't know the number.

Q. Have you ever made the decision of how to carry that kind of load at an A-pillar?

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A. Yes, in that I'm suggesting not changing the load-carrying quality of that structure.

Q. But for an actual bus that runs up and down the road, have you made the decision about what the A-pillar has to carry and how strong it has to be?

A. In regard to this discussion? I've made the decision that we need to not change the -- the load-bearing structure, just rotate it. So it would support the same test load, which is a roof load.

Q. Now, do you know whether or not there is a change in the force that -- this A-pillar could carry depending on how it is oriented?

A. It's a vertical load, so I don't see how it would make any difference.

Q. Do you know if it carries a load because it drives, it turns left and right?

A. That structure doesn't carry much load in that regard.

Q. How much does it carry?

A. I don't know the exact number. I -- MCI doesn't even know the exact number.

Q. How do you know MCI doesn't know? How do you know the engineers haven't looked at that?

A. I have talked to the engineer on this bus. And it -- I was not struck with the depth of the --

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he's a good guy, but I wasn't struck with the depth of the analysis. They don't know the coefficient of drag in this thing, for example.

Q. Well, when you're talking to the guy, are you talking to a guy at a trade show?

A. Correct.

Q. Do you know if the guy was an engineer?

A. Correct.

Q. He was?

A. Yes.

Q. Do you know if he designed the bus?

A. Yes.

Q. What was his name?

A. He's a Dutch gentleman, Hoog something. I'm terrible with names.

Q. You talked to Virgil Hoogestraat?

A. Yeah.

Q. You don't think Virgil Hoogestraat knows about the loads that the A-pillar has to carry?

A. Oh, he's expert on the loads they have to carry, but that is only specified as a vertical load.

Q. Now, do you know whether or not Virgil Hoogestraat actually designed the A-pillar for the J bus?

A. I understood he was responsible for this

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design, so that's all I know.

Q. And who told you that?

A. He did.

Q. He told you he was responsible for the entire design of the J bus?

A. He didn't specify in great detail he had designed the bus.

Q. Okay. So do you know whether or not you change what the load could be carried if you change the orientation of the member that carries the load?

A. Well, it's a lot like changing the orientation of a stud that you put in a wall, you know, those 2-by-4s. Rotate it, and it's still going to carry the roof.

And that's the only thing they specify in the load-bearing capacity of these structures, is how much vertical load it can support.

Q. Yes, sir. Have you ever seen wood studs in a frame house rotated so that they are parallel to the plate on the --

A. That isn't what I was suggesting; I'm saying that, if you did, it would support the same load.

Q. So you personally are not trained as an engineer, you have never designed a bus, you have never figured out whether or not you could do what you

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suggest we do for the A-pillar?
A. Well, I've run that same concept by a number of the manufacturers, and none of them have pushed back saying that it can't be done.
Q. Well, that's not the same thing as saying, "We've looked at it. We think it can be done. We think we don't have to change anything at all because of the load the A-pillar is required to carry."
A. They've had a lot of time in the years we've discussed this to have done so, and no one has pushed back at all.
Q. They don't say anything?
A. No. They've said it's a fairly simple thing to change these problems.
Q. Now, in terms of your training and experience, you were a driver, were you not?
A. Correct.
Q. And you drove for how many years?
A. Since 1979.
Q. Are you still driving?
A. No.
Q. When did you stop driving?
A. 2015.
Q. And that's when you went full-time with the union?

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A. Correct.
Q. So you are trained as a bus driver, performed as a bus driver, and are a professional bus driver?
A. Correct.
Q. And what kind of buses did you drive?
A. Oh, a wide assortment. You want all the names?
Q. Were they transit buses?
A. Yes, they were exclusively municipal transit buses.
Q. Did you drive any motor coaches?
A. No.
Q. What is the difference between a transit bus and a motor coach?
A. There's quite a few. The motor coach is taller, has a different suspension design, has different doors. There's one door as opposed to two or three. There's quite a few differences.
Q. Is there a difference in the way they perform when they're performing their mission? For example, do the motor coaches go point to point over the road?
A. Yeah.
Q. Do the transit buses go bus stop to bus stop in the urban area that they serve?
A. Depends on the exact kind of service. They

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can both do express service or not. They're very overlapping --

Q. When -- when you --

A. -- applications.

Q. When you were a bus driver with a route, what was the average speed of your bus?

A. Oh, that would vary widely from freeway speed to a doddle. The average for the industry is 13 miles an hour.

Q. So the average for the transit bus is 13 miles per hour?

A. Correct.

Q. And the average for your bus was 13 miles per hour?

A. Not necessarily. It would vary widely, as I said.

Q. Sir, have you ever testified that the average speed for your bus was 13 miles per hour?

A. No. I did offer that you could use that to approximate the number of miles that I had traveled in my career.

Q. So you used 13 miles an hour to indicate how many miles --

A. Indicate a wild approximation of how many miles a vehicle goes. But that's not my bus; that's an

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approximation.

Q. Okay. Do you know what the average speed for a motor coach is?

A. No.

Q. Is it higher than 13?

A. I don't know.

Q. You don't have any idea what it is?

A. I'd have to make a guess.

Q. Now, in your present position, are you an advocate?

A. For the union? Absolutely.

Q. And you're an advocate for the members that the union serves?

A. And the public.

Q. And the public.

And whom do you advocate? I mean, do you advocate bus manufacturers? Do you advocate the government? Whom do you advocate?

A. Everyone who has a role in making tomorrow safer.

Q. Okay. Now, you are not a fan of transit bus manufacturers, are you?

A. I wouldn't say that precisely. They have a difficult economic problem. There are very few buses sold in a given year, and they've got to support a huge

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area in which they do that marketing and support. And so they're in a real economic pickle. So I don't think they're evil.

Are they producing buses that are way substandard? Yeah.

Are they killing people? Yeah.

Is it unnecessary? Yeah.

Q. Have you published in blogs or other places your opinion about the transit bus industry?

A. Yeah, I do a lot of that.

Q. Did you put an article in Greater Greater Washington?

A. I was interviewed for one, yeah.

Q. And was it published?

A. Yes.

Q. And was the title of that "Many buses have built-in blind spots that make driving them dangerous"?

A. Yes.

Q. In that, did you say "all transit buses are built as cheaply as possible"?

A. I'd have to see the text again, but it would be within what I would likely say.

Q. I'm going to show you, but not offer into evidence, just to refresh your recollection --

A. Thank you.

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Q. -- the article I'm referring to.
Read it to yourself, sir, and tell me whether or not you state in that article "all transit buses are built as cheaply as possible."
A. It says "essentially all."
Q. Okay. Do you also say, "On modern buses used in New York and D.C., the typical pillar and mirror, which are as wide as a legal pad at arm's length, are directly in line with pedestrians in left turns. Over a dozen pedestrians can disappear behind a blind spot so large"?
A. Yes. And that's a low estimate.
Q. Do you also say that "Also, while safe bus mirrors are used in a few systems, most North American designs widen the blind spot and directly block the driver's view of people walking in the street"?
A. Correct.
Q. And there you say that Larry Hanley, the president of the largest transit union in North America, has said that those safety engineering failures transform buses into mobile manslaughter machines?
A. Correct.
Q. Now, you know, sir, that this particular lawsuit does not involve a pedestrian walking near a

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bus?

A. Correct.

Q. It does not involve a bus turning in to a pedestrian because the pedestrian was in the blind spot?

A. Correct.

Q. It does not involve a bus turning in to anything because he couldn't see it as a result of the blind spot?

A. Correct.

Q. So these criticisms that you lodge, without going into their merit, about transit buses and their blind spots have nothing at all to do with this lawsuit?

A. Right. That's why I didn't produce this for counsel.

Q. Okay. And, in this case, this case involves a motor coach, not a transit bus?

A. Correct.

Q. And, in this case, the driver of the bus did not turn in to a pedestrian?

A. I haven't said so. Don't think so.

Q. And the driver did not turn in to a bicycle?

A. Correct.

Q. The driver did not alter his course at all.

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A. He did.
Q. He turned away from the bicycle?
A. Correct. That's altering his course.
Q. All right. So he didn't turn in to the bike; he turned away from the bike?
A. Correct.
Q. So all the complaints that you have received, all the cases you have talked about, all the remarks you have made about buses turning in to pedestrians have nothing at all to do with this case, do they?
A. That's not true. The blind areas greatly hindered Mr. Hubbard's ability to see Dr. Khiabani. And if you can only see a tiny portion of a person at risk, are you going to have a slower response time? Almost certainly, yes.
So the hazards that are talked about here and in the other examples we've shown -- talked about aren't present on the right and are contributory factors to this and many other accidents and fatalities.
Q. So they don't have anything to do with Mr. Hubbard turning his bus to the right into Dr. Khiabani; right?
A. Correct.
Q. In your opinion, they have to do with

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Mr. Hubbard not turning to the left sooner?
A. Correct.
Q. And it is your belief that, if he had had better visual lines, he would have turned sooner?
A. Precisely.
Q. And that would have avoided the collision?
A. It could have either mitigated or avoided.
Q. Okay. And you offered that opinion about this coach even though you've never operated a motor coach?
A. Correct.
Q. And you have never operated a J4500?
A. Correct.
Q. And you have not done a line-of-sight study for a J4500, have you?
A. Correct.
Q. What is a line-of-sight study?
A. Well, you're probably referring to an engineering exercise where you take a CAD model -- a computer-aided design model of the bus, and you put in reference eye positions and things called eyellipses. It gets into the weeds. It's a fairly technical process. And it generates an analysis of what you can see and what you can't.
Q. And that is a way of measuring the actual

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visual -- or the line of vision that the driver would have when he's driving down the road?

A. It's one way of doing it. You can do it with cameras. There's a wide variety of ways you can do it.

Q. But they all refer to them -- all those studies are called line-of-sight studies?

A. There are other terms used.

Q. And you have not done a line-of-sight study for the 4500?

A. I've looked at the question of the visibility obstructions here and analyzed their impact on this case. And, as I've said repeatedly, Dr. Khiabani was very nearly completely hidden at the critical moment when he starts to move toward the bus. And I -- I absolutely firmly believe that that contributes to the accident's having occurred and to its severity.

Q. Yes, sir, but all the other criticisms of the visibility available in a J4500 that you talked about -- the A-pillar, the dash, how high the dash was, what the door looked like, where the glass was in the door, where the glass was in the windshield -- you didn't do any kind of study to see whether or not what you were telling us could be verified by a line-of-sight study, did you?

A. I depended on the thorough analysis of others

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in this case who produced the graphics you've seen. It's abundantly clear that that is a very visibly challenged vehicle, a huge -- huge blind areas.

Q. So you relied on what other people told you to arrive at your opinion that there are huge blind areas -- blind spot areas?

A. Not exclusively. I've looked at these things in regard to this problem, gotten on them and examined them in conventions and on the street, and I've looked very closely at these issues in some of the other models which are very similar.

Q. Okay. Have you ever done a line-of-vision study on any bus, any motor coach?

A. Yes.

Q. But not this one?

A. I've only analyzed parts of that question.

Q. And those parts are the ones that apply to the right front where Dr. Khiabani was as depicted in the pictures that you were given by others?

A. Precisely.

Q. And if I understand correctly, then, your complaint is not that Mr. Hubbard couldn't see Dr. Khiabani and therefore turned in to him; your complaint is that Mr. Hubbard could not see Dr. Khiabani until a particular point in time when he

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turned left, and if he had had better vision, he would have turned sooner?

A. Correct.

Q. So your criticism, then, has to do with where Dr. Khiabani was when Mr. Hubbard saw him and made the decision to turn left?

A. No, my criticism is with the very poor visibility.

Q. Of that particular point?

A. Whenever you're operating this thing.

Q. Well, could -- could the bus driver see him through the windshield?

A. If he's a distance up ahead, yes.

Q. Have no trouble seeing him if he's 15 feet ahead?

A. That's probably true, yeah.

Q. Okay. So your criticism has to do with the point where Dr. Khiabani was when he began his turn to the left.

A. No, my criticisms have been general about the huge amount of unnecessarily obstructed area in that bad design and that that contributed to this case.

So I'm not talking about a specific spot along the road; I'm talking about the design wherever it is on the road.

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Q. Yes, but what we're talking about in this case, what makes a difference in this case, is what Mr. Hubbard could see at the right front when Dr. Khiabani made his turn to the left or moved to the left; correct?

A. I think it extends beyond that. His awareness of Dr. Khiabani would have been greatly enhanced before that moment of the doctor tipping toward the bus, and so that would have probably increased his response time -- or improved his response time as well.

Q. But the specific point we're talking about is you want Mr. Hubbard, when Dr. Khiabani makes his move to the left or tips to the left, to turn away?

A. I'd actually like that to happen a little bit earlier, that you're getting close to him, you'd want to be extremely aware that he's there. And this is a cautious operator. I'd expect he would tip away -- turn away a bit before.

Q. Well, isn't it true that there's no reason for the bus to move to the left prior to the bike moving to the left?

A. No. You want to maintain as much clearance as possible, so the -- the better your visibility of that bicycle is, the more likely you are to have

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maintained an optimum clearance.

Q. Have you testified on another occasion that there was no reason for the bus to move to the left prior to the bike moving to the left?

A. If I did, I misspoke a bit. I would like to see a slight increase. There was no impending accident prior to the aerodynamic force tipping the doctor into the side of the bus. But I'd like to see as much clearance as possible.

Q. But have you testified on another occasion that there is no reason for the bus to move to the left prior to the bike moving to the left?

A. I assume that you have that in writing, and so I'm assuming that I've said that.

Q. Would you like to see it?

A. I'll trust you.

Q. All right. So if we take that as true -- and it was true when you said it at your deposition; correct?

A. I would like to be ultra clear about it now, that I think it -- he could have been slightly further away if he was more aware of the doctor, because he doesn't report on awareness of the doctor for quite a stretch. And if had he been more visibly present, then I think he might have had a little bit more clearance.

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MR. TERRY: Your Honor, this is a good time. A good time for lunch, or do you want to continue?

THE COURT: Why don't you come up to the bench so that we can coordinate, please.

(A discussion was held at the bench, not reported.)

BY MR. TERRY:

Q. All right. Mr. Sherlock, I want to turn your attention to the actual incident where Dr. Khiabani was involved in contact with the bus. Okay?

You were provided, were you not, with drawings that had been prepared by other experts retained by the plaintiff that showed that particular point in time; correct?

A. Correct.

Q. And you relied on their work in reaching your own opinions?

A. Correct.

Q. And those particular diagrams were in your report where you expressed your opinions?

A. Correct.

Q. And on the basis of those, you reached the opinion that you have expressed to the jury that, if Mr. Hubbard had seen Dr. Khiabani earlier than he did or -- he would have been able to move to the left?

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A. Likely would have, yes.

Q. All right. I'm going to show you what has been marked as Exhibit 208A-001, 2, and 3, and ask you to identify those as the drawings that you used and relied on.

MR. KEMP: Were they marked?

THE WITNESS: Yes.

MR. TERRY: Okay.

Your Honor, we would offer Exhibit 208A-001, 002, and 003.

MR. KEMP: I have no objection, Your Honor.

THE COURT: Okay. Very good. They are admitted.

(Whereupon, Defendant's Exhibits 508 through 510 were admitted into evidence.)

THE COURT CLERK: Next in order.

MR. TERRY: I gave -- we gave them a number at the bottom.

THE COURT CLERK: Oh, I see. Okay.

MR. TERRY: All right. I'm going to show -- put up for the jury --

MR. KEMP: Judge, can we have some numbers first?

MR. TERRY: I beg your pardon. They are on

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the bottom.

MR. KEMP: That would be your next in order.

MR. TERRY: Well, the number that we gave them was 208A.

THE COURT: I just want to verify something, Mr. Terry. Are these the defendants' exhibits or plaintiffs' exhibit?

MR. KEMP: Judge, that was my point. I think they should be 509 through 510.

THE COURT: Yeah, so they're next in line.

MR. TERRY: It doesn't matter what they're marked.

MR. KEMP: It does.

THE COURT: So the next in line defense exhibits.

MR. TERRY: Say again.

THE COURT: So they're next in line in the defense exhibits.

MR. TERRY: I'm offering them.

THE COURT: Yes. Correct. So --

MR. KEMP: Judge, I have 509, 510, and 511. I mean, don't take me as gospel. That's -- that's --

MR. TERRY: The number doesn't make any difference to me, Your Honor.

THE COURT: Our last one was 507. So we'll

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start from there.

MR. KEMP: You're right, Your Honor. I had 508 as the next. So it's 508, 509, and 510.

THE COURT: Okay. Thank you.

MR. KEMP: Sorry about that.

BY MR. TERRY:

Q. All right, sir. I'm going to put up on the board Figure 1. Okay?

You see that --

A. Uh-huh.

Q. -- on the TV?

A. Yes.

Q. Okay. Figure 1 shows the relationship of the coach and the bike shortly before contact; correct?

A. Correct.

Q. Do you know what the relationship of the bus and the bike was one second before this?

A. Not precisely. That was all done by this excellent group.

Q. If the bus -- do you know how fast the bus was traveling?

A. They reported 25 miles an hour.

Q. Will you accept 25?

A. Yes.

Q. If the bus is traveling at 25 miles per hour,

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how many feet per second does he travel?
A. It's 1.466 feet per mile per hour, so you can do the math. It's going to be -- I could -- I could calculate for you if you'd like.
Q. I'd like you to be comfortable with the number. Do you need a calculator?
A. Oh, I'm -- I'm going to be comfortable with a number. Call it 37.
Q. I have Mr. Barger's phone here.
A. Thank you.
Q. Open to the calculator.
A. All right.
Q. Question is, if the bus is traveling 25 miles per hour, how many feet per second does it go?
A. 36.65.
Q. Okay. So that would mean a second before this, the bus would be 36.65 back?
A. Correct.
Q. Do you know how fast the bike was traveling?
A. Roughly half that.
Q. So that's about 12 miles per hour?
A. Yes.
Q. If the bike is traveling at 12 miles per hour, how many feet does the bike travel in one second?
A. It would be half this number, so

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approximately 18.

Q. Okay. So in the diagram or the model that we have been using throughout the trial -- can you see from there?

A. Oh, yeah.

Q. Okay. So that has the bus by the bike lane. Do you know if it is before or after the pedestrian crossing in this instant?

A. That is before the near side of the crosswalk.

Q. Okay. Is it past the stop line or do you know?

A. I believe it is, but you have to look at the markings on the street here. I have done this exercise. And you can see them in the aerial photo.

Q. Okay. So is it at the stop line or beyond?

A. Can I step over to that?

THE COURT: Would you like him to step --

MR. TERRY: Yes.

THE COURT: Yes, go ahead.

THE COURT RECORDER: You need to take the microphone.

THE COURT: You need to take the microphone.

THE WITNESS: The portable isn't working.

THE COURT RECORDER: Not together.

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THE COURT: It should be working right now.
THE WITNESS: Oh, is that working? Is that working?
THE COURT RECORDER: Yes.
THE WITNESS: Oh, okay. Excellent.
BY MR. TERRY:
Q. So where do we set the bus to correspond to Figure 1 up there?
A. The plane of the front is roughly at the back of the arrow here. Okay. There's the arrow for the bike lane, and the front of the bus is approximately equal to that. So it's a little bit in front.
Q. Okay. And then where would the bike be?
A. Now, this is a guesstimate based on these. This is a single angle. You need two angles to triangulate and really know where something is.
MR. KEMP: Your Honor, can we approach for a minute?
THE COURT: Yes.
(A discussion was held at the bench, not reported.)
BY MR. TERRY:
Q. Okay. Mr. Sherlock, using this, maybe the other two diagrams, to assist you --
THE COURT: You can speak a little bit

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louder, please.

BY MR. TERRY:

Q. If you would use this diagram, maybe the others to assist, could you place the bus where this drawing, when the jury's looking at, has it on the photograph here.

A. (Witness complies.) So the front wheel is at the back edge of the arrowhead, and the bicycle is toward the bus from the arrow. This thing is hard to get to move carefully. Very roughly there.

Q. Okay. Now, using the arithmetic you and I just did, can you move the bus one second back in time?

A. These are 50-foot intervals. It's not going to be very accurate. 36 feet is roughly a bus length, so ...

Q. It's 45, isn't it?

A. Right. That's -- that's why I'm not using the entire length of the bus here.

Q. All right. And then where would the bike be?

A. This is a very approximate guess.

Q. Where would the bike be, approximate guess? Moving it back.

A. Half as far. I will use the paper as a ruler. So I fold that in half. That would give me half of the speed. And that's a very, very rough

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guess.

Q. So how many feet do you think that is? 20? 15?

A. I just gave you the figure it's half of -- so it's 18 feet.

Q. Okay. So the bike is 18 feet in front of the bus?

A. No. Back from its prior position.

Q. So how far is it in front of the bus if we move the bus back 37 feet and the bike back, what we did?

A. It's going to be about that same distance again. Now, this is based on a pure guess. There's no evidence for this approximation. There's only video evidence further along. So this is assuming both are at a steady speed. We don't know that. Either one of them can be slowing --

Q. Mr. Sherlock, assuming the bus is traveling at a constant speed, the bike is traveling at a constant speed, one second before this picture right here that the jury's looking at, that would be the relative location of the two vehicles?

A. Very approximately.

Q. You can take your seat, sir.

And if that is the relative location of the

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two vehicles, the bike is in front of the bus 15 to 20 feet?
A. Correct.
Q. The bike is -- sorry. Didn't mean that to be emphasis.
The bike is visible through the front windshield to the driver?
A. Yes.
Q. And the bus then overtakes the bike as they proceed down the road toward the intersection?
A. We don't know what happened, but that is your scenario.
Q. Well, if the bus and the bike are moving at a constant speed and you know where they are as depicted in that picture at zero and you take it back to minus 1, that's what it looks like?
A. I'm just saying that we don't have any evidence to support that. I'm not willing to sit here and say that that's where they were. Your scenario, as opposed to the real one, that is played out in that position of the models.
Q. That's correct. If we assume the bus and the bike are traveling at a constant rate of speed, if we assume the distance they would have traveled in a second, and we assume that that's what it looked like

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right before contact, this is what it would have looked like one second before?

A. Correct.

Q. And do you have an opinion as to whether or not a proximity sensor to the side of the bus would have delivered any reliable information if it had been there?

A. These sensor systems don't just look to the side. So I want to make sure I'm understanding your question.

I'm not absolutely certain whether side proximity sensors would all catch 180 degrees. Some of them do. The camera-based systems do. Some of the lidar-based systems do. Radar systems try to integrate that. A radar system might have a little bit of a hole there.

Q. But before the contact, the bike is not on the side of the bus; right?

A. We don't know that.

Q. Well, if we assume the bike and the bus are traveling at the same rate of speed and we assume that looks like that at point zero, one second before, it would look like that?

A. Absolutely.

Q. And the bike is not on the side of the bus?

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A. In that scenario, correct.

Q. Now, in order for the bike to be on the side of the bus and get to that point, the bike has to travel faster than the bus.

A. Could you repeat the question?

Q. If we put the bike and we say, "We don't know; he could have been right here," one second before, in order to get to that position, as depicted on No. 1, the bike has to go faster than the bus?

A. Correct.

Q. Any evidence that the bike ever went faster than the bus?

A. We don't have any evidence for the speed of either vehicle in that location.

Q. Well, do we have any evidence that the bike went faster than the bus?

A. No.

Q. Okay. So if we set it up like this, then, where you had it, more or less, the side sensor, if all it looked at was what's on the side of the vehicle in the blind zone, so you don't turn into it, would report no information about the bike?

A. Yeah, but these systems do better than that.

Q. But in terms of something to the side of the bus, the bike's not there. If the system was there, it

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wouldn't report any information about the bike. If all the system is doing is looking to the side; right?

A. He's still to the side. There are systems that have 180-degree field of view, meaning from here to here (witness indicating). So you mount it on the side of the bus, and it sees everything that you would see if you were standing in that location and turning your head from side to side.

Q. Well, why don't we -- do you have a proximity sensor in your car?

A. Yes.

Q. How does it work?

A. That particular one is radar-based.

Q. And what does it tell you? What information does it give you as the driver?

A. It -- as far as information, it just slows down the car if there's an impending impact to the front.

Q. How about to the side?

A. I don't have a side sensor on that --

Q. Have you driven in a car that has a side sensor?

A. Yes.

Q. What happens?

A. Well, it varies from car to car, but they

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alert you to another vehicle, particularly immediately adjacent.

Q. To the side?

A. Correct.

Q. In your blind spot?

A. Yeah. Or some you can see will still cause an alert.

Q. So if that's the kind of sensor that is on the bus, the side proximity sensor, if that's what is on the bus, that sensor would provide no information about Dr. Khiabani, would it?

A. I don't think that's true. It depends on the sensor range of operation. If it's one of these that has 180 degrees, it's going to alert you to the presence of the doctor. If it's the 360 designs, it's going to alert you to the presence of the doctor. If it's a wide sensor on the front, which is integrated in these systems, then it would tell you about the doctor.

Q. How about just a proximity sensor that tells you if there's something on the side in your blind spot? Would that sensor tell you anything about the doctor?

A. Some of them would.

Q. Okay. How about just the sensors just reporting what's on the side of the bus in your blind

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spot?
A. The doctor is to the side of the bus here.
Q. But he's not in the blind spot.
A. I don't think the sensor cares. You're talking about a visual blind spot for the driver versus a sensor that isn't suffering that blind spot. The sensor is on the outside surface of the bus. It's not behind massive pillars and opaque door, a dash that's too high, and all these other problems. It's right out there where it has unobstructed --
Q. Mr. Sherlock --
A. -- sight lines.
Q. -- the dashboard doesn't have anything to do with whether or not the driver can see the doctor over here, does it?
A. It depends on where. In the -- these exhibits, it's playing a big role. That's why, if you look at the third page, you almost can't see the doctor.
Q. Yes, sir. But that's when the bus moves forward and the bike moves forward. I'm talking about right here when they're 20 feet apart. None of the blind spots you talked about have anything to do with whether or not Mr. Hubbard could not see Dr. Khiabani where he was not located; right?

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A. Could you repeat that question?

Q. All the things that you talked about to this jury about, all the blind spots that exist in the MCI bus, all the criticisms, all the complaints that you had, which have nothing to do with this occurrence, none of them would -- even if they fixed them just like you said, none of them would tell Mr. Hubbard that the doctor was right here on the side of the bus when he was 15 to 20 feet ahead; correct?

MR. KEMP: Your Honor, I object. That was a remarkably compound question.

THE COURT: Overruled.

THE WITNESS: Well, if I could pull that apart, I don't agree with the fundamental assumption that these blind spots don't play a role, because there's more to that driver's obligation than just looking at that right-side pillar structure and the doctor. He's got to be attending to all sorts of other things. And every one of those other obstructions demands a large amount of attention and moving around in the seat, as he has described multiple times. And all of that takes your vision away from the -- what we know later, in retrospect, was a great hazard to the doctor.

But -- so those other blind spots play a

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critical role in your ability to attend to this one issue.

BY MR. TERRY:

Q. Okay, sir.

A. Now, as for the second component, because I didn't really completely get your question, but you were asking about would a blind spot sensor detect the doctor in that location.

It would depend on the sensor. Some will, and I can't speak to the limitations of the others. But certainly some of them have 180-degree fields of view, and they will see anything to that side, to the right side, of the plane of the side of the bus.

Q. Well, you mentioned the Eaton available in 2005.

A. Yes.

Q. What does it show?

A. I don't remember the exact width of the beam on the side. It's a very wide beam. That's why it only goes out 20 or so feet.

Q. Okay. So what length of the bus? I mean, I'm thinking that the sensor will tell you if there's something on the side of the bus that you can't see.

A. The sensors are based on an angle of -- that they're observing. It's not based on a width of the

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bus or anything.
Q. Okay. We can agree, can we not, that, if this is how they are one second before, there is nothing that would have told Mr. Hubbard -- if we did your design for the blind spots, if we put in a sensor, there was nothing that would tell Mr. Hubbard the doctor is really back here; right?
A. Well, they could have faulted and -- but they're not designed to do that.
Q. I'm -- don't assume they're broken or don't suggest they're broken. If they're working just the way they're supposed to and all the blind spots you criticize are gone, none of it could tell Mr. Hubbard the doctor's back here; correct?
A. I don't understand the question. The doctor is there, where the bike is.
Q. Right. He's not back here on the side of the bus.
A. Correct.
Q. And so the bus overtakes him, Dr. Khiabani is in his front, and the bus comes up from behind; right?
A. We're assuming that for this example, yeah.
Q. And so then we get to the point where we started, which is right about here. Okay?
A. Correct. At this point we really do have

solid evidence.

Q. All right. And we know about where they're located.

A. Correct.

MR. TERRY: It's a convenient place to break, Your Honor.

THE COURT: Yes. Okay. Time for lunch.

Ladies and gentlemen, you're instructed not to talk with each other or with anyone else about any subject or issue connected with this trial. You are not to read, watch, or listen to any report of or commentary on the trial by any person connected with this case or by any medium of information, including, without limitation, newspapers, television, the Internet, or radio.

You are not to conduct any research on your own relating to this case, such as consulting dictionaries, using the Internet, or using reference materials.

You are not to conduct any investigation, test any theory of the case, re-create any aspect of the case, or in any other way investigate or learn about the case on your own.

You are not to talk with others, text others, tweet others, google issues, or conduct any other kind

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of book or computer research with regard to any issue, party, witness, or attorney involved in this case.

You're not to form or express any opinion on any subject connected with this trial until the case is finally submitted to you.

Reminder again, you are not to discuss anything concerning the trial with one another or your notes.

Please take an hour and 15 minutes. So let's be back at 2:00. All right. 2:00.

THE MARSHAL: All rise for the jury.

(The following proceedings were held outside the presence of the jury.)

THE COURT: Okay. Is there anything else we need to discuss at this point?

MR. KEMP: Yeah. Judge, I just want to point out for the record that Exhibits 508, 509, and 510 are the exact same pictures that, when I tried to use them during my direct, counsel, Mr. Russell, ran up and told the Court I was violating a motion in limine, and we had to take the break.

These are the exact same pictures. And I didn't object to them being used, but I want the record to reflect that, in the event that on appeal, there's any sort of argument whatsoever that we violated the

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motion in limine.

MR. TERRY: I think any question on appeal will be solved by the fact that I formally withdrew the objection, and Mr. Kemp did not object to the pictures or the drawings at the end.

MR. KEMP: Judge, I'm not asking for a ruling of the Court. I just want the record to be real clear that these are the exact same pictures that --

THE COURT: Understood. And Mr. Terry has also clarified the record. Thank you.

See you after lunch.

MR. TERRY: Thank you, Your Honor.

MR. KEMP: Thank you, Your Honor.

(Luncheon recess was taken.)

THE MARSHAL: All rise.

THE COURT: Are we ready for the jury?

MR. KEMP: Yes, Your Honor.

THE COURT: All right. Let's go on the record. Please bring the jury in. Thank you.

(The following proceedings were held in the presence of the jury.)

THE MARSHAL: All jurors accounted for, Your Honor.

THE COURT: Thank you. Parties stipulate to the presence of the jury?

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MR. TERRY: We do.
MR. KEMP: Yes, Your Honor.
THE COURT: Please be seated.
Mr. Terry?
BY MR. TERRY:
Q. Mr. Sherlock, I am going to go over just a few things before we start, to put us back where we were before we broke for lunch. Okay?
Put up Figure 1, please.
We used Figure 1, which was this, to depict the bike and the bus in relative proximity shortly before contact; right?
A. Uh-huh. Correct.
Q. And we used that location here, but I'm not certain that that was intended to put the exact location on the road. I'm just interested in the relative position of the two vehicles; right?
A. Okay.
Q. And the relative position of the two vehicles is as indicated here.
You and I then looked at what would have -- where would they have been one second before if they maintained the same speed they had then.
A. Correct.
Q. And the bus goes back 36 feet; the bike goes

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back 22 feet. And if we had done it another second, the bus would go back another 36 feet and the bike would go back another 22 feet; right?

A. Okay.

Q. Okay. Now I want to go back to right before the incident occurs, because I've got the bus and the bike located as indicated in Figure No. 1. Okay?

MR. KEMP: Your Honor, for the record, that's Exhibit 507.

THE COURT: Okay. Exhibit --

MR. KEMP: Figure 1 is Exhibit 507.

MR. TERRY: I apologize.

THE COURT: Thank you.

BY MR. TERRY:

Q. You had agreed --

MR. BARGER: Pardon me for interrupting. For the record, it's 508.

BY MR. TERRY:

Q. Mr. Sherlock, you're not reading the mail on my phone, are you?

A. No, I'm trying to -- the numbers you quoted weren't quite right, so I was going to go back and recompute them.

Q. Okay. Were they close?

A. They were sort of close.

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THE COURT: So this is Exhibit 508? Thank you.

THE WITNESS: There you go.

BY MR. TERRY:

Q. All right. So you had agreed that there was no reason for the bus to move to the left until the bike moved to the left from that position; correct?

A. Well, we had this discussion before. I had stated that there was no reason, probably in answer to something about was there an appearance of a collision impending, and I had said no. And I had this caveat that I had offered that I would like to have seen the bus move over just preventatively, without any kind of knowledge of impending contact.

Q. Have you looked at your deposition, sir?

A. Yes.

Q. All right.

May I have the deposition of Mr. Sherlock?

Mr. Sherlock, I'm going to hand you the original of your deposition. I'm going to -- do you know how to read those things, where to find things?

A. Vaguely, yes.

Q. I would like you to go to page 107.

A. (Witness complies.)

Q. Are you there, sir?

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A. Yes.

Q. Line 20.

A. Yes.

Q. The question was, "So what would he have seen out of the different front windshield that would have caused him to move to the left before the bike begins to move to the left?"

What was your answer?

A. "I don't believe that it's reasonable to expect that he would move to the left prior to the bike moving to the left."

Q. And was the testimony that you gave then true when you gave it?

That was your opinion?

A. Yes.

Q. So it is not reasonable to expect the bus to move to the left prior to the bike moving to the left; correct?

A. Yeah, I am obviously torn on that.

Q. But what you said at your deposition was just what I quoted you; right?

A. Yes.

Q. All right. Now, why don't you take a look at Figure 3.

THE COURT: For the record, this is

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exhibit -- is this an exhibit or a demonstrative?

MR. TERRY: This is an exhibit. It was one of the ones...

THE COURT: This is 510? Okay.

MR. TERRY: 510.

THE COURT: All right. Thank you.

BY MR. TERRY:

Q. All right. Now, in 510, we're looking at the view from inside the bus to Dr. Khiabani, who's in the same position that we saw in Figure 1; correct?

A. Correct.

Q. All right. And that's what the people inside, like the driver, could see when they looked out while Dr. Khiabani was in the position indicated in Figure No. 1.

A. Correct.

Q. Now, he has not started his move to the left; correct?

A. Correct.

Q. He doesn't start his move to the left until the bike is slightly behind the leading edge of the bus relative to the bus?

A. Most -- fairly certain, yeah.

Q. That's when he begins his turn to the left; right?

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A. Most likely.
Q. The bike turns -- okay.
Now, you did not do a line-of-sight to see whether or not Hubbard -- Mr. Hubbard could have seen the driver at the point he began the turn to the left, have you?
A. No.
Q. You relied on Fat Pencil, and you -- based on their work, you believe Mr. Hubbard would have had vision at that point?
A. At this point. It's open to question. If he moves back just a slight bit, he's going to be behind the pillar almost entirely.
Q. Okay. But you told me that the -- Fat Pencil concluded that Mr. Hubbard would have had vision at this point, that point being when the bike began its move? Not much, but some.
A. That's conflating two things, I think.
This is before the bicyclist gets sucked in. There is visibility. Now, if he moves back slightly, he's going to be behind the pillar. And I'm not willing to say that that wouldn't pretty much completely block him. He might have 1 percent or 2 percent visibility, something like that.
Q. But he would have visibility?

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A. I don't think you're going to be able to depend -- bet your life on a 1 percent or 2 percent visibility, even 10 percent.

Q. I want you to take a look at page 89 -- or 88 of your deposition, at line 23.

A. Yep.

Q. Actually, we'll begin at line 18. Okay?

A. Okay.

Q. The question was, "Where is the bike relative to the bus when it begins to move to the left?"

What was your answer?

A. "I keep telling you it's slightly behind the leading edge, slightly behind the plane of the front of the bus."

Q. The next question was, "Have you done a line of sight to see whether or not Mr. Hubbard could see the driver at that point?"

And read the first two lines of your answer.

A. "No. I've depended on Fat Pencil, and I believe you would have a vision at that point."

Q. That was your testimony and opinion then; is it your testimony and opinion now?

MR. KEMP: Your Honor, he can't just read one sentence of the answer. I'd ask that he be allowed to read the rest of it.

Your Honor, I've got the page if you want to look at the thing.

THE COURT: You can -- you can follow through on cross-examination.

MR. KEMP: Okay.

THE COURT: Or cross -- your surdirect.

BY MR. TERRY:

Q. All right, sir. Now, I want you to take a look at the next, Figure 3.

Could you blow up that, sir, if you would.

Okay. You are -- this is the same position he was in before he begins the turn to the left; correct?

A. Correct.

Q. All right. So when he begins the turn to the left, the bike is going to be coming back just a little bit; right?

A. Correct.

Q. Do you know how far back it comes before he's -- the front of the bike is behind the leading edge?

A. No, I couldn't -- I wouldn't want to guess.

Q. Okay. Does the whole bike have to get behind the leading edge?

A. No.

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Q. How much of the bike?
A. The center of mass of the rider has to become just behind the plane of the front.
Q. Okay. So that means that Mr. -- or Dr. Khiabani himself has to get behind the front of the bus?
A. Correct. Just slightly.
Q. Now, you know that it has been determined that, when contact occurred between the bike and the bus, the left handlebar or grip of the bike impacted the right front of the bus?
A. The side.
Q. All right. The side. And that mark is indicated on this diagram right here?
A. Correct.
Q. So that when he begins his turn or movement to the left, body comes behind the bumper -- oh, body comes behind the bumper, and then it all goes all the way down here so that the left handlebar makes that move -- that mark?
A. Correct.
Q. How much distance is that?
A. I haven't measured it.
Q. Is it less than 10 feet?
A. I haven't measured it.

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Q. Okay. Can we measure it off the bus, then, just looking at the -- if we have a measurement of the bus, can we just measure the distance from the front of bumper to the mark?

A. I have no way to do that.

Q. We could do that if we had other exhibits?

A. If you had the bus here, yeah.

Q. Okay. And we could determine how far the bike travels before contact is made?

A. Certainly. And Fat Pencil, the folks that did this excellent work, can undoubtedly give you that number.

Q. Now, it is your claim, your opinion, that if Mr. Hubbard had vision of -- visual acuity, line of sight, to the bike when it began its turn to the left -- whether because the blind spot had been removed or some sort of radar, lidar, or proximity sensor told him that he was there -- that he would have turned to the left and a different outcome would have occurred?

A. That's extremely likely.

Q. That's your opinion?

A. Yes.

Q. Have you factored in perception-reaction time?

A. Yes.

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Q. What is perception-reaction time?
A. That's the delay between the event occurring and your responding to it.
Q. And that means that nothing happens to the bus until that time expires?
A. Correct.
Q. What is the perception-reaction time for this event?
A. It would be best described by looking at the Fat Pencil analysis of when Mr. Hubbard actually did steer. There's a Gaussian-like -- there's a bell curve called a Gaussian distribution of human response times in daylight. It peaks at one and a quarter seconds. It's two and a quarter at night, for example.
But we don't know Mr. Hubbard's actual response time without looking at the reconstruction that Fat Pencil did. And you can't get it from that, I believe. The whole question was, would he have steered earlier had he had clear, unobstructed sight lines? And that seems to be a near certainty.
Q. When I took your deposition, did you use 1.25 seconds as the perception-reaction time for Mr. Hubbard?
A. I think I answered a question to the effect, if you had to look at that, what number would you use?

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And I would use that standard statistical model. And you would be making a guess that it would be 1.25 seconds during daylight. And that's the time from an event occurring until you moved your foot from the throttle to the brake.

Q. Now, the move that Mr. Hubbard made is not a complex move; it's relatively simple. He perceives something; he made the decision to move to the left.

A. I wouldn't characterize it quite that way. He has to know where he is in the lane. He has to make sure he's not going to run over something on the left. It's a fairly complex decision.

Q. Is 1.25 seconds enough for him to perceive, evaluate, and react?

A. Not in that more global sense, because he's got problems on the left regularly as he's driving. And so it's a very long time to really completely do that.

Q. All right. Setting aside the problems to the left -- because I don't believe Mr. Hubbard testified that he looked to the left before he made the move. Okay?

A. He testifies to constantly bobbing and weaving and addressing that problem.

Q. Yes, sir. But this is an assumption that he

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sees the bike at the instant it makes the move to the left, and reacts; right? That's what I'm --

A. I don't understand the question.

Q. All right. What I'm asking you to assume is that when this bike that is depicted here in Figure No. 3, when the body gets behind the bumper, Mr. Hubbard sees him. He has to evaluate it and then he has to make a move. He didn't say he looked to the left; he just said he moved to the -- looked to the left. He just said, "I rotated the steering wheel."

Remember that?

A. Yes.

Q. Is 1.25 seconds enough perception-reaction time to account for that decision and move?

A. Well, there's a series -- a series of things happening here. And one is that Dr. Khiabani gets affected by the leading edge suction and he begins to be tipped in. We don't know where exactly in that sequence Mr. Hubbard sees him, but the -- the reasonable guesstimate, not based on Mr. Hubbard or knowing what happened, but if you've got to guess what happened, it would be 1.25 seconds after he notices Dr. Khiabani has closed the distance to the bus.

But we don't know where that is in terms of the exact position of the bicycle or exactly how far

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into the tip where he gets tossed sideways into the bus.

Q. The assumption I have asked you to make is that Mr. Hubbard saw the bike as soon as it made a turn to the left. Okay? We know that Mr. Hubbard moved to the left. Is 1.25 seconds enough for him to perceive, evaluate, and react to the movement he would see?

A. The -- the question gives me pause. It's assumed that Mr. Hubbard sees Dr. Khiabani at the instant he begins to move. And we have zero evidence -- it's, in fact, extremely unlikely that that would be the case. That's an instant in time. Is he going to be looking there at that particular instance? It's a stretch to think that that's --

Q. Mr. Sherlock, what I'm trying to do is I'm trying to say, if what you said should have been on the bus in terms of visibility, line of sight, sensor devices -- radar, lidar, and all the rest -- was there, and you claim Mr. Hubbard would have seen the bike as soon as he made the move to the left. Can you assume that fact, that whatever you're complaining about has been fixed and Mr. Hubbard can see the bike as soon as he begins the move to the left?

A. All of the systems, whether it's the visual system or the aids to our visual systems -- the lidar,

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radar, all of these things -- they all have what's called latency. So they depend on the beginning of a move that establishes a collision path between the two vehicles -- or the vehicle and Dr. Khiabani. They all have latency. None of this happens at an instant.

Once the driver does perceive that there's something he's got to respond to, that 1.25 seconds is the average of this Gaussian distribution, not Mr. Hubbard's response time necessarily.

Q. But it is the average response time for an individual in daytime?

A. In daytime. And it's specific to moving the foot.

Q. Okay. And nothing happens to the bus until 1.25 seconds has elapsed.

A. There's an additional latency. The air brakes in this system and the steering in this system have latency. So, again, there's a delay.

Q. What kind of delay?

A. I don't know on the steering. In the braking, it's -- oh, you could figure roughly a half a second, a quarter to a half a second.

Q. You were here when Mr. Hubbard testified?

A. Yes.

Q. Did he testify that he applied the brakes?

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A. No.
Q. So we can set that aside?
A. Actually, he did say he slowed, but he wasn't specific about whether it was the throttle and the retarder that could be associated or whether it was the brakes.
Q. Setting aside application of the brakes, do you know or have an opinion as to the latency in the steering mechanism?
A. No.
Q. I want you to assume there is none. Okay? Set aside the brakes, no latency in the steering mechanism, 1.25 seconds has to elapse before the bus does anything.
A. That's before the human does anything. The bus is a separate question.
Q. Well, I want you to make the assumption that as soon as Mr. Hubbard starts to turn the wheel, things happen.
A. Okay.
Q. All right. So that won't happen until 1.25 seconds has elapsed. Agreed?
A. I don't think it's precisely the right number. The number I gave you is for moving the foot. So moving the hands, I don't have that number.

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Q. Why don't we just assume that it's the same, that it's a simple decision. Go left. Okay? 1.25 seconds has to expire before the bus moves at all.

A. Again, I don't mean to be argumentative, but "has to" is not the term. "Is likely" makes sense because it's a statistical distribution. It's how often do you roll a certain number with dice. It doesn't have to come up that number the next time you roll.

So I'm not trying to be a difficult, but it's -- just misstates the facts.

Q. I want you to assume that the applicable perception-reaction time for the move Mr. Hubbard made was 1.25 seconds. Can you do that?

A. I can make an assumption, yeah.

Q. So if he has 1.25 seconds to perceive the move to the left, appreciate the move to the left, evaluate and make the judgment he needs to move the bus to the left, 1.25 seconds elapses?

A. That would be correct if you add the physical motion.

Q. Okay. How far does the bus travel in 1.25 seconds?

A. Well, it's going to be that 25 miles an hour times 1.25 times 1.466. That's the number of feet.

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Q. You got my phone. How far does the bus travel during the perception-reaction time for Mr. Hubbard?
A. So, 25 miles an hour times 1.466 -- oop -- oop -- 1.466 feet per second per mile per hour. Oh, that's a crazy number. There.
All right. Mind if I use my own? This is coming up with a very crazy number. It could be my entry method. I have my phone back here.
Q. Where is it, sir?
A. It's in a bag. It's in a bag underneath, and then a pocket. It's easier if I just get it.
MR. TERRY: Is it -- Mr. Pepperman here?
THE WITNESS: Yeah.
Thank you. Appreciate it.
Four-point -- 45.81 feet.
BY MR. TERRY:
Q. Roughly 45.9 feet?
A. .8.
Q. Okay. So that means that at -- when the doctor hits here behind the bumper, the body does, Mr. Hubbard reacts. His bus is going to move 48 feet down the road before the bus moves left; correct?
A. Yeah, but not with respect to this particular position.

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Q. What does that mean?
A. This is the distance the bus travels -- if you assume no latencies in the system and if you assume a 1.25 second response for the steering motion, all of which we don't know happened, then, yes, it would be 45.81 feet between the alert for the driver and the beginning of the steering left.
Q. That means the bus travels down the road 48 feet before any move to the left?
A. Well, 45.8.
Q. 45.8. The bus moves 45.8 feet before there's any move to the left?
A. Purely in this scenario, which is based on things that don't happen in reality.
Q. Well, there is perception-reaction time; right?
A. Yes.
Q. All right. Which means that the bus will move 45 feet before there's any move to the left; right?
A. As I understand the reconstruction, you're putting the bus where the move to the left had already occurred. So the events we're discussing happened 48 feet back.
Q. Right.

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A. A second and a quarter back.
Q. Back here. If Mr. Hubbard turns as quickly as possible, perceives it when it happens, 1.25 seconds, this bus moves 45 feet down the road, before it makes any motion to the left.
A. Well, Fat Pencil has that move analyzed in their very accurate analysis based on the video and the known facts.
Q. Mr. Sherlock --
A. And that's the best reference here.
Q. Mr. Sherlock, I'm asking you, the expert, who has told us that it is your opinion that, if Mr. Hubbard had seen the bike when it made its turn to the left, he could have avoided by just turning to the left himself; right? That's what you told us.
A. That's not precisely what I said. I said that, if he has a reasonably unobstructed vision of Dr. Khiabani instead of extremely obstructed vision, that he is extremely likely to have begun that move earlier.
Q. Right. But if -- but if he can't --
A. It's the bottom switch.
Q. But if he can't begin the move until the bike begins the move and the bus can't begin moving until perception-reaction time, 1.25 seconds, the bus moves

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45 feet down the road before there's any motion to the left.

A. I believe the demonstration you're doing with the model is inaccurate. This happens well prior to the positions you're indicating.

Q. Well, I'm not interested in the positions. I'm interested in the relative motion of the two vehicles, the bus and the bike. I'll put it anywhere you want. Anywhere you want. Okay?

If the bus has to perceive the bike coming to the left, which occurs when the bike is behind the bumper, it -- he will go 45 feet down the road before there is any left steering input; right?

A. That would be the correct assumption if he's moving his foot, not his hands.

Q. It would take longer if he's moving his hands?

A. Shorter, because they're already on the steering wheel. The foot has to move. The leg is a longer limb with greater mass. It's slower to move your leg than it is your arm. And you got to move from one pedal to another. So it would be less time then.

Q. So now you want to change the perception-reaction time you gave me at your deposition?

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A. The perception-reaction time I gave you is for moving the foot. And it just simply is what it is.

Q. Well, it's what you gave me when I asked you about how much perception-reaction for the move Mr. Hubbard made.

A. Yeah. I said if I was going to give a wild guess, that's what I'd do.

Q. Okay. So 1.25. That means, by your wild guess, your arithmetic, that, if Mr. Hubbard sees the bike move to the left as soon as it happens, his bus will go 45 feet down the road before there is any movement of the bus to the left; correct?

A. Well, we've been through this a bunch times.

Q. How about you say yes or no?

A. No, if we're talking about absolute precision.

Q. How about just rough estimates or estimates?

A. Yes, I would go with that.

Q. You would go yes?

A. Yes.

Q. All right. Which would mean that having seen it would not change the outcome.

A. Not at all true. He did see him, and it did change the outcome. He steered to the left.

Q. Yes, sir. But he doesn't -- if he doesn't

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steer to the left until 45 feet after Dr. Khiabani makes his move to the left, the accident's already happened, contact's already happened.

A. Well, we know that, in fact, he did see him moving toward the bus, not colliding with the bus, moving toward the bus prior to contact. And he did steer to the left, which did mitigate the collision to a certain extent.

Q. Well, I am coming to that. Right now I'm just dealing with your testimony that that is an accurate description of the relative position of the bike and the bus right before contact.

That's what you said; right?

A. Yes. It's reasonably accurate. I don't believe it's absolutely precise, but it's reasonably accurate.

Q. And if Mr. Hubbard saw the bike as soon as it began the turn to the left in this relative location right here, his bus would move 45 feet down the road, with a reaction time of 1.25, before the bus goes to the left.

A. Well, we don't know that he hasn't already begun his move to the left -- or, well, I take that back. So could you repeat your question.

Q. All right. I thought we had established --

THE MARSHAL: Just leave it on.
MR. TERRY: Okay. Sir, I'll do that.
BY MR. TERRY:
Q. I thought we had established that the bus was moving in this lane straight down the lanes.
A. Correct.
Q. And he didn't make a left move until he perceived something ahead of him.
A. Correct. To the side.
Q. To the side. And your complaint is that he should have seen Dr. Khiabani before he did and he would have moved to the left sooner and avoided the collision?
A. Basically.
Q. But what I'm suggesting is that, if he sees him when he is at this location, because of perception-reaction time, the bus is going to travel 45 feet down the road before there is any motion to the left.
A. That's assuming that it is at this point that Mr. Hubbard perceives Dr. Khiabani's move. That's unlikely based on the Fat Pencil analysis of the actual path of the bus. As opposed to this scenario, we're building the actual path.
Q. Well, the scenario we are building is based

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on your claim that this is the relative position of the two vehicles an instant before contact and that, if Mr. Hubbard had seen the doctor when he made his left turn, he would have turned left and avoided the contact.

A. I'm not saying that this is an instant before contact.

Q. Shortly before contact?

A. In these kinds of scenarios where there's -- the closing distances are so short, it's a fairly long time.

Q. If the bus moves 45 feet down the road before there is any motion to the left, does it prevent the contact or does the contact occur anyway?

A. That's an interesting question. If the bus moves far enough to the left, there's not going to be a collision. We know that Mr. Hubbard saw the bike coming toward the bus. He then responds in a normal human fashion. He starts his turn to the left. That wasn't enough to avoid the collision. So he is going to travel that 45 feet. You have to have an earlier recognition of the motion of the bike or something else to change the impact.

Q. But if his first recognition of the motion of the bike was where you have it right here, when the

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bike begins its turn to the left, there's no way Mr. Hubbard can turn left and avoid contact before it occurs.

A. That's why I have objected to this scenario.

Q. Because his bus is going to move 45 feet down the road?

A. This isn't accurate. The scenario you're building isn't accurate.

Q. No -- okay. But the conclusion is that, if that's the location of the two vehicles at the time Mr. Hubbard perceives the turn to the left, there's no way Mr. Hubbard has enough time to turn left and avoid the event?

A. I'm not assuming that that's that moment.

Q. Now, we do know where the contact occurred; right?

A. Correct.

Q. Contact occurred 6 feet inside the bus lane.

A. Yes.

Q. Okay. Do you know or have an opinion where on the map that we have here the actual contact occurred?

A. I'd have to rely on the analysis of the accident reconstructionist. I wasn't asked to do that. I didn't perform that analysis. I did look at theirs,

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and I think it's extraordinarily good work. And I would rely on them. I looked at the vision -- I looked at the vision and the aerodynamic elements.

Q. Okay. Where did they put the actual contact point?

A. You would have to refer to their work. I'm sure you have it.

Q. So let's put it down here. All right? Right about here. Okay? That's me putting it there. I'm not relying on any expert analysis. I'm just putting it there; right?

A. Okay.

Q. And at this point right here, we know that the bike comes in contact with the bus, as indicated by the black mark on the right side of the bus.

I'm trying to put the bike at the point where it would have struck the bus. Okay? And we know that that point is 6 feet into the bus lane; right?

A. Yes.

Q. Which means we know Mr. Hubbard has started a turn to the left sometime before.

A. Correct.

Q. All right. If his perception-reaction time is 100 -- 1.25 seconds, where did Mr. Hubbard begin his turn to the left that put him there? How far back down

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the road was he located?

A. Again, I -- I didn't really analyze this element, and Fat Pencil did a great job of it. You could see the actual facts in their analysis.

Q. I'm asking you, the expert witness, Mr. Sherlock, if you assume that the accident, the contact occurred 6 feet inside the bus lane, that means Mr. Hubbard turned to the left before he got there. If his perception-reaction time is 1.25 seconds, how far did his bus travel? Where did he make the decision to turn left on the road?

A. In this abstraction, I have given you the distance traveled at 25 miles an hour. I don't -- I think that isn't the correct position for contact. And, again, I was not brought in to analyze any of that. I relied solely on these other people. And I think they did terrific work.

So this is not what I was here to analyze. I'm here to analyze the vision and the aerodynamic forces.

Q. Okay. So if Mr. Hubbard made the decision to turn left 45 feet back, 1.25 seconds, right here; right?

A. That's not far enough.

Q. Back here? What is 45 feet from here to

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here?

A. I don't accept that as necessarily the point of contact even.

Q. Well, if that is the point of contact and it is 6 feet within the bus lane, how far back did Mr. Hubbard perceive something that he reacted to and turned left?

A. The best evidence is something I didn't analyze and Fat Pencil did.

Q. Well, what is the answer with simple arithmetic? 1.25 times the feet per second the bus travels at 25.

A. Well, I've given you that number repeatedly.

Q. And that number is?

A. 45.8 seconds based on this abstraction. This is not reality.

Q. Now, the bike also would move; right?

A. Correct.

Q. And how far would the bike move in 1.25 seconds?

A. Very roughly, half the distance.

Q. 22 feet; right? More or less?

A. More or less.

Q. All right. So we put it how far ahead of the bus is the bike when the bike is 22 feet back from what

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I have identified as the point of contact? How far ahead?
A. That would be roughly the same distance because the bike's going half the speed of the bus.
Q. So it would be about 20 feet in front of the bus?
A. Correct.
Q. So if Mr. Hubbard has a reaction time of 1.25 seconds and he turns left because of something he perceives and he winds up 6 feet within the bus lane, where contact occurs, that event occurred 45 feet before contact; right?
A. Could you repeat that again.
Q. Okay. If Mr. Hubbard, driving the bus, perceives something that causes him to evaluate and make the decision to do a left turn, the point at which he saw anything would be 45 feet before the actual point of contact, wherever it is?
A. If you accept that that was his actual response time, which I don't.
Q. Using it as the average response time for people in daylight, if his response time is 1.25 seconds, Mr. Hubbard saw something 45 feet before contact that told him he needed to turn to the left?
A. Only in this abstraction.

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Q. Correct?
A. Correct.
Q. Now, what did Mr. Hubbard see that told him he needed to turn to the left?
A. He reported seeing the bicycle coming, closing the distance to the bus.
Q. So he saw -- if the bike is 22 feet ahead, he saw the bike coming into his lane; right?
A. He wasn't specific about the lane, I don't believe. He said -- he said it was coming over.
Q. Wherever it was, whatever lane it was in, he saw the bike coming over toward him 22 feet in front of him; right?
A. I don't accept that. I'm not saying that.
Q. Okay. If it was 22 feet in front of him, he would have seen it through his windshield?
A. The best evidence is Mr. Hubbard, who says he sees him out the door or the corner of the windshield, which is much more like that.
Q. But when he sees -- when he sees him, he's 22 feet in front of the bus under the scenario that I have constructed?
A. Under the abstraction, yes.
Q. All right. So he sees him 22 feet ahead, he makes the decision to turn left, and he winds up about

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45 feet down the road, 6 feet into the bus lane; right?

A. An imaginary bus and an imaginary bicycle could go through that scenario. That's not what happened here.

Q. Now, if that is what happened, that what Mr. Hubbard saw that caused him to move to the left is something that happened 22 feet in front of him so he could see it just looking out the windshield, the blind side, the restricted visibility, the radar, the lidar, the proximity sensors had nothing to do with this scenario?

A. There wouldn't have been a collision. If this happens 22 feet ahead and they're both -- there's only a 12-mile-an-hour difference between the two of them, he's going to be able to stay away from the bicycle. This is not -- this abstraction is not what happened.

Q. And when he makes the turn, the bike has not reached the point where you say it makes its move to the left; right?

A. Could you repeat again. I'm sorry.

Q. All right. So when Mr. Hubbard makes the decision to turn and the bike is 22 feet ahead of him coming into him -- right? -- the bike has not reached the point that you have up there where he -- he gets

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sucked in by some reverse flow?
A. This model, based on pure assumptions, is not what happened. And I'm not going to say that that is reality. This is not reality.
Q. If this is reality, the bike began the turn to the left before the bus got there.
A. In a very different scenario than the one that killed Dr. Khiabani, sure.
Q. And it was before the leading edge of the bus got there?
A. In that world, yes. In the case of Dr. Khiabani, absolutely no.
Q. Which means that air displacement, if there is any that disrupts the bike, had nothing to do with the event; correct?
A. Nothing to do with the abstract event that is not reality.
Q. Well, this abstract event, so that you understand what I am doing, is I take the bus from a .6 feet within the bus lane, where the contact occurred, and back it up to a point where Mr. Hubbard perceived whatever it is he perceived that caused him to turn left. That's what I have done; right?
A. Yes.
Q. And that puts the bus and the bike separate,

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and the bus 45 feet back, the bike 22 feet back, with 22 feet between them right?

A. Then the accident wouldn't have happened.

Q. But the accident did happen, sir; right?

A. That's why this scenario bears no resemblance to reality.

Q. If you factor in perception-reaction time, there is, is there not?

A. That's still going to be a no.

Q. And if this scenario where Mr. Hubbard sees something that makes him turn to the left 45 feet before contact with the bike, the blind spot that you've talked about and the aerodynamic, whatever you think it is, had nothing to do with the event; right? You'll agree with that?

A. It's hard to tease out the abstraction versus the reality. Could you repeat that again? I'm sorry that I've asked --

Q. All right. Let me do it one more time; then we'll leave it alone. Okay?

Mr. Hubbard sees something that tells him he needs to turn to the left and he goes 45 feet before he begins the turn and he winds up 6 feet in the bus lane. That's where contact occurs; right? He's moved over 6 feet.

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A. Okay. That part I agree with.
Q. All right. The --
A. Oh, no, not necessarily. The bus was not necessarily riding the right lane line. So the bus was already probably a foot and a half or 2 feet over, and so the entire 6 feet was not the steering motion.
Q. So -- but it took 45 feet, 1.25 seconds, for the steering motion to begin?
A. In the abstraction.
Q. Right. And if this occurs when Mr. Hubbard makes his turn to the left, the bus -- the bike is 22 feet in front of him, coming toward him such that he recognizes it as a hazard; right?
A. It's completely inconsistent with what Mr. Hubbard says about seeing the bike out the door and right corner of -- far corner of the windshield. Completely inconsistent. These -- you're a half a bus from reality here.
Q. So your -- you think this scenario is incorrect because Mr. Hubbard describes seeing the bike out the right side?
A. Yes. And the reason I think that is that there are certain kinds of perceptions for which we are fairly inaccurate. A lot of eyewitness testimony is very inaccurate.

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But there are certain kinds of events that really jolt you. Having a pedestrian -- or bicycle drive at your bus is going to be burned in your memory. That is something you can bet your house on. And you'll see in a bunch of the other witnesses, they're all over the map on stuff that they weren't really paying attention to.

But this, I believe Mr. Hubbard because it's so critically important. It would be burned in his memory. And is forever, I think.

Q. So then let me ask you this: Where was the bike on the road when Mr. Hubbard saw him?

A. I didn't do that computation, but it's roughly in this region here. Very roughly.

Q. So you think Mr. Hubbard saw the bike, as depicted in Figure 3, made the decision to turn left, and 1.25 seconds later, the bus turned left?

A. I didn't do this analysis. I didn't go through and look at all of the elements. But purely based on what Mr. Hubbard said, this is the scene that he's describing.

Q. All right, sir. And if the bike is in front of the bus, it is visible to the operator; correct?

A. Correct.

Q. All right. Now, you were asked about the S-1

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Gard.
Do you remember that?
A. Yes.
Q. Are you aware of the S-1 Gard?
A. Yes.
Q. Was it used in your bus company, King City?
A. King County.
Q. King County.
A. No.
Q. Have you studied or tried to find out about the S-1 Gard or encouraged others to use it?
A. I've looked at it. I haven't encouraged its use, but I think it would have probably saved Dr. Khiabani.
Q. Are you aware of any steps taken by your union that encourages the use and application of the S-1 Gard?
A. No.
Q. Have you seen any set of data that indicates people have actually been protected or saved by the S-1 Gard? Not press reports, not individual stories. Data.
A. I guess I would call someone being saved and reporting that actual data.
Q. I'm talking about a data set where they look

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at the frequency of events, whether or not the events have been affected by the S-1 Gard. Data. You know what I'm talking about.

A. I don't believe that exists.

Q. There is no such data, is there?

A. I doubt there is. I haven't looked. I doubt there is.

Q. So your company, the one that you worked for for so many years, doesn't use the S-1 Gard; your union doesn't push it for its members; and you know of no data that says it would actually have an impact or it would have saved Dr. Khiabani. Correct?

A. That last element perhaps goes a bit too far. I just asserted that, when you see a press report of somebody who was struck by a bus, goes under where the rear tires is going to get them, and are brushed aside by the S-1 Gard, I would accept that as data, that that S-1 Gard saved them.

Q. Are you talking --

A. Dr. Khiabani only had his head impacted, and the likelihood is he would have been saved as well.

Q. Are you talking about Mr. Parada?

A. I don't know his name.

Q. But it's the witness who testified here? Were you made aware of him?

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A. I'm not aware of that, but I think he was in California somewhere.

Q. Mr. Parada also testified that he never was in the path of the wheels.

Did you know that?

A. Then he wouldn't have been hit by the S-1 Gard.

Q. And he doesn't know if he was hit by the S-1 Gard. That's also what he said.

A. I'm -- I don't know the details.

Q. But in terms of statistical data that is used by people in your industry and business to make decisions about what should be or should not be on a bus, there is no data you are aware of that says the S-1 Gard is effective; correct?

A. So far as I know.

MR. TERRY: Thank you, sir.

That concludes the cross, Your Honor.

THE COURT: Mr. Kemp, redirect.

MR. KEMP: Yes, Your Honor.

REDIRECT EXAMINATION

BY MR. KEMP:

Q. Mr. Sherlock, let's go back to perception-reaction time. Okay?

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And before Mr. Terry cut you off you were trying to explain to the jury why there's a difference in perception-reaction time in taking your foot off the gas and putting it on the brake, and the difference if you already have your hands on the wheel and you turn.

You remember that area that he cut you off?

A. Yes.

Q. Could you explain to the jury the difference?

A. I think we're all aware of how quickly you can respond to the steering input that's required, just the physical response, not the cognitive element. Deciding to do something is going to be the same for both motion of the foot and motion of the hands.

But you're already hands on the wheel and you can move very quickly. You can move your hands much faster than you can move your legs. And, also, you don't have to go from one control to another in the case of the hands and you do in the case of the feet.

The number I have for response time is that going from the throttle to the brake.

Q. Okay. So the 1.25 is the foot changing positions and braking?

A. Correct.

Q. So when -- and that's not what happened in this case, is it?

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A. Correct.

Q. So when Mr. Terry used the 1.25 over and over and over again, he was using a perception-reaction time that's not applicable to this case; correct?

A. Correct.

Q. So is the foot -- or the foot time different than the hand time?

A. Certainly.

Q. And is it lower or is it higher?

A. It's going to be shorter.

Q. And if it's not -- if it's shorter than 1.25, what is it?

A. I don't know the exact number.

Q. Okay. And the reason it's shorter is because you already have the hands on the wheel?

A. That's the largest element, plus you're faster in moving your arms than you are in moving your leg.

Q. And we do know that the driver in this case did start turning to the left; correct?

A. He, in fact, turned.

Q. So whatever the perception-reaction time was, he did do it; right?

A. Exactly.

Q. Now, how far more to the left would the

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driver in this case have had to have turned to avoid this accident?

And by "this accident," I'm referring to Dr. Khiabani's head being run over by the rear tires.

A. Oh, that particular element of it. If the bus was just a short distance, I don't know precisely how far into Dr. Khiabani's head, but if it's the full length of your shoulders to your head, it would be underneath that.

Q. Now, Mr. Terry kept focusing on the moment of impact of the bike to the bus; right?

A. Correct.

Q. And if we could have avoided Dr. Khiabani's head from being run over, that would be a different point of impact; right?

A. We wouldn't be here.

Q. Okay. So let's assume that we need to move the bus over 4 to 6 inches. Okay?

A. Okay.

Q. And let's assume that there was some perception-reaction time, because he did turn left; right?

A. All right.

Q. Okay. So whatever that was, the real issue in this case is how much more alert would he have had

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to have to move the bus over 3 or 4 inches; right?
A. Correct.
Q. Okay. And how much more time would be needed for that?
A. It's a complex computation because you're moving over at an angle. And Fat Pencil's analysis shows that path. I'm a little uncomfortable projecting it. I could do the trig and give you a guess based on X number of degrees, but ...
Q. Well, we're not talking 20, 30, 40 feet like Mr. Terry is talking about, are we?
A. My guess is not.
Q. We're talking about the bus moving 5 or 6 feet more over, are we not?
A. Further back?
Q. Correct.
If the bus starts moving a little earlier and starts turning this way, the rear tire misses Dr. Khiabani -- misses Dr. Khiabani?
A. I'd have to do some math to be -- to give you a good solid guess, but it isn't an enormous distance.
MR. TERRY: Your Honor, I think the witness is indicating that what he's doing now is speculating. I would object to speculation.
THE COURT: Sustained.

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BY MR. KEMP:

Q. Well, it's less than 1.25 seconds; right?

A. Way less.

Q. Probably in the neighborhood of .10 to .12 seconds?

A. Oh, sure. Yeah.

Q. Okay. And with regards to a left proximity sensor -- excuse me, Your Honor. Would that give warning -- it's Friday, ladies and gentlemen.

Would that give .10, .12 seconds' warning -- additional warning to the bus driver?

A. It seems likely.

Q. Okay. Now, Mr. Terry asked you to assume that the proximity -- the side proximity sensor shoots out directly kind of like a laser. That's what he asked you to assume; right?

A. Yes, a narrow field.

Q. And is that how proximity sensors work, a narrow field like a laser?

A. No. As I had indicated before, there are some that give you 180-degree field of view. There are integrated systems that give you a 360-degree field of view. So they're able to see a very wide angle.

And you can stack these things up. You can see -- and, in fact, the Eaton system that was brought

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up involves a sensor in the front and another on the side. So these can be integrated.

MR. KEMP: Can I have 197, please.

BY MR. KEMP:

Q. And Mr. Terry asked you questions about the Eaton system? Do you recall those?

A. Not offhand. Oh, yes. Sorry.

Q. And does the product literature for the Eaton system depict whether or not it's a laser-type proximity sensor or a --

A. It certainly indicates that it is not.

MR. KEMP: Your Honor, I'd move to admit 197 at this time.

MR. TERRY: I think it's hearsay, because when I asked the witness if he knew about the Eaton available in 2005, he had no knowledge.

THE COURT: I would like you to come to the bench, please.

MR. TERRY: Oh, sorry.

(A discussion was held at the bench, not reported.)

BY MR. KEMP:

Q. Do you know whether or not the Eaton system is a laser beam or a wide-angle beam?

A. Oh, it's certainly not. And this is an

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installation guide, so I don't see the -- and, just quickly looking, I didn't see --

MR. TERRY: Excuse me, Your Honor. Objection.

May we approach?

THE COURT: Yes.

(A discussion was held at the bench, not reported.)

BY MR. KEMP:

Q. And, again, is the Eaton system a laser-like system or a wide-angle system?

A. Wide angle.

Q. Okay. And you using Mr. Terry's hypothetical, what would a wide-angle proximity sensor system do?

A. It would alert you to objects close to the bus and across a wide angle to the side.

Q. Okay. And you've repeatedly referred to Mr. Terry's example here as an abstraction. Do you recall that?

A. Yes.

Q. What did you mean by that?

A. It didn't bear much resemblance to reality.

Q. And why is that?

A. The actual events were analyzed by Fat Pencil

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and the accident reconstructionist. And it's very much different than what he was suggesting.
     Q. Okay. And we've referenced Fat Pencil repeatedly.
     A. Yes.
     Q. Okay. Who is Fat Pencil?
     A. Oh, it's a company that does accident reconstruction and very high-quality three-dimensional reconstructions.
          So that -- they go to a scene, they map it out with these laser tools and photogrammetric techniques where you analyze photographs. And then they create this scenario where you can put the camera in that scenario anywhere you want. So you can show the driver's perspective, Dr. Khiabani's perspective, the perspective of witnesses, or whatever else you want. You can make the measurements as you've seen in some of these exhibits. It's an extraordinarily powerful piece of work.
     Q. Okay. And the Fat Pencil has a person behind it?
     A. Joshua Cohen.
     Q. Okay. Thank you.
          Now, with regards to Mr. Terry's questions about whether or not a proximity sensor or the

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elimination of blind spots would have made a difference, do you remember those questions?
A. Yes.
Q. Okay. Let's start with a proximity sensor.
Would a proximity sensor have made a difference in this case?
A. Especially if it was used as a blind spot sensor, the guide does speak specifically to that.
Q. And by "make a difference," I'm referring to would it have moved -- would it have allowed the driver to move the bus over so that it would have been over another 4 inches and not run over Dr. Khiabani?
A. There's an extremely likelihood. The driver, for whatever reason -- whether he's looking in his mirrors or whatever's doing -- he seems to be unaware of where that bicycle is for a stretch of time prior to its moving over. Had this system alerted him, hey, come on, check, you've got a problem going on, and told him where to look, as some of these do, there's a fair certainty this would not have occurred.
Q. Okay. And with regards to the good right-side visibility that you've outlined and the bad right-side visibility that -- that this bus has, if you had cured those problems, would that have made a difference, in your opinion?

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A. It seems extremely likely that Mr. Hubbard would have seen the bicycle coming his way earlier if the bicycle wasn't something like 90 percent obscured.

MR. KEMP: Thank you.

RECROSS-EXAMINATION

BY MR. TERRY:

Q. Mr. Sherlock, Mr. Kemp has suggested that the 1.25 perception-reaction time was my creation; right?

A. I think he said you used it. I don't remember his saying it was your creation, but I could be wrong.

Q. Do you know where I got it?

A. Yes. From me.

Q. So the 1.25 is the perception-reaction time that you said you would use if you were going to compute anything about this event?

A. Correct.

Q. So the 1.25, then, the source for the 1.25 is you.

A. Correct. It's the only number I have for the response time of people. It's the one I most often use. It's the brake response.

Q. All right. So we know that there is a perception-reaction time, there is a response time. If we use 1.25 between Mr. Hubbard's perception of the --

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Dr. Khiabani's bicycle, it takes him 45 feet before there's any left movement; right?
A. Correct.
Q. And we know that when the two came together, Dr. Khiabani and the bus, the contact point was behind the right front tire?
A. Correct.
Q. And it was 6 feet within the bus lane?
A. Correct.
Q. Which means that Mr. Hubbard had started his turn 45 feet earlier -- or had seen something 45 feet earlier that caused him to turn?
A. That's roughly what you would expect in this abstraction.
Q. And we know that Mr. Hubbard testified that what he saw was Dr. Khiabani coming in, drifting in, entering his lane.
A. Moving toward the bus, yes.
Q. And that event occurred in front of the bus?
A. That's not what he described. It's off to the side. He describes out the door and out the right side of the window. So that would put the bicycle to the side of the bus, not ahead of the bus.
Q. All right. I don't want to go through the calculations again, but if you factor in 1.25 seconds

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of perception-reaction time, the bike had to be in front of the bus when Mr. Hubbard made the decision to turn left. Agreed?

A. No. That's not what he reports.

Q. I'm asking you, if you factor in where the vehicles -- the bus and the bike -- came together, a reaction time of 1.25, Mr. Hubbard would have been behind the bike at the time he made the decision, just looking at those things?

A. Just as an abstraction --

Q. Yes.

A. -- not having anything to do with the real events?

Sure.

Q. So that means that the bike would have been in front of the bus, visible through looking either the right front windshield, and it would have been -- Dr. Khiabani would have started his turn to the left before any air displacement from the bus got to him?

A. That doesn't make sense on the physics of the air displacement, and it's not what Mr. Hubbard reports.

Q. If the bike is 22 feet in front of the bus when Mr. Hubbard sees it turn to the left, that's something he could see through the front and it's

before the air displacement gets to the bike.
That much, you can agree to; right?
A. It doesn't make sense on two different counts.
One is the physics, and the other is the report of Mr. Hubbard, who seems extraordinarily clear on precisely when he saw the doctor begin his move toward him. And, as I said before, this is the kind of event you really remember.
Q. Mr. Sherlock, I'm asking you, on the basis of the assumption that Mr. Hubbard saw something that made him turn to the left, that that was 45 feet before contact with the bike, the bike would have been in front of Mr. Hubbard when he perceived and made the decision to turn to the left. You can agree with that, can you not?
A. I'd actually -- the way you analyze these problems is a vector diagram. And I'd need to actually draw this out and run the computations. So I'm uncomfortable with agreeing to a scenario that clearly did not occur and I haven't had time to analyze --
Q. And if the bike --
A. -- and I just simply believe it didn't occur.
Q. If the bike is 22 feet ahead of Mr. Hubbard when he perceives that he needs to go to the left, that

means Dr. Khiabani has started his left movement before the air displacement even gets to him; right?

A. But this isn't what happened.

Sure. In an abstract world, in a different event, sure.

MR. TERRY: Thank you, sir.

I have nothing further, Your Honor.

FURTHER REDIRECT EXAMINATION

BY MR. KEMP:

Q. All right. Let's just focus on the last series of questions.

He asked you to assume that the bike was 22 feet in front based on this 1.25 perception-reaction time; right?

A. Basically.

Q. So, basically, he took the wrong perception-reaction time; right?

A. Correct.

Q. Asked you to assume that that was the right perception-reaction time?

A. Correct.

Q. And then he calculated this fake 22 -- or 22-feet figure; right?

A. Correct.

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Q. And then he asked you what would have happened?

A. Correct.

Q. Why is that wrong?

A. It's in direct conflict with what we know occurred.

Q. Okay. And, again, the 1.25 is the gas-pedal-to-brake perception-reaction time?

A. Correct.

Q. It's not the steering perception-reaction time?

A. Correct.

Q. So if you use the real perception-reaction time, it's a different case; right?

A. Correct.

Q. It's the case we have here in front of us?

MR. TERRY: Objection, Your Honor. May we approach?

THE COURT: Yes.

(A discussion was held at the bench, not reported.)

THE COURT: All right. Okay. Very good. All right. Let's see.

We're going to take a ten-minute break. The parties have stipulated to waiving the Court's reading

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the admonishment; is that correct?

MR. TERRY: So stipulated, Your Honor.

MR. KEMP: Yes, Your Honor.

THE COURT: All right.

And, again, you -- you're going to follow -- now we have Marshal Padilla, who's going to take you straight into the jury room, but you cannot leave that room unless you're just going to the restroom that's literally adjacent to it. No one can go into the hallway or anything else. Okay?

Thank you.

THE MARSHAL: All rise for the jury.

(The following proceedings were held outside the presence of the jury.)

THE COURT: Just waiting for the door to close completely.

MR. CHRISTIANSEN: Want me to close it tight, Judge?

THE COURT: Yes, I do.

MR. CHRISTIANSEN: It's just sort of leaning, I think.

THE COURT: I don't know. They're all in there. If not, I will ask the marshal to make sure he does that.

MR. CHRISTIANSEN: It's closed tight, Your

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Honor.

THE COURT: All right.

MR. KEMP: Okay. Yeah, Judge, let's start from square one on perception-reaction time.

THE COURT: Okay. Let's.

MR. KEMP: Perception-reaction time means when someone notices, perceives a danger, how long does it take for them to react? That is a variable. It changes depending on the person and depending on the age of the person.

Let's talk about the person. Some baseball players, basketball players, they have better perception-reaction time than normal people.

THE COURT: Understood.

MR. KEMP: Okay. So other people have --

MR. TERRY: Excuse me, Your Honor. Can the witness be excused while we argue?

THE COURT: Yes. Yes.

THE WITNESS: Sorry.

THE COURT: I'd like the witness to be excused, actually. Thank you.

And -- and, sir, there's -- the restrooms are out there.

THE WITNESS: Thank you.

THE COURT: Okay.

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MR. KEMP: So in a different --

THE COURT: One moment, sir.

Go ahead.

MR. KEMP: And it differs by age. For example, my perception-reaction time when I was 16 is probably a lot quicker than it is now.

THE COURT: Understood.

MR. KEMP: Okay?

So -- so -- so you don't have -- this 1.25 number they've been using is not a definitive perception-reaction time.

Now, the second variable we have in this case is the perception-reaction time between the events. So in the one they're using, the 1.25 -- which, again, is variable -- that is from the time you -- you notice a danger, you take your foot off the gas, and you put your foot on the brake. That is not the applicable perception-reaction time in this case because that's not what the driver did.

Instead, he turned the bus -- the bus to the left. There's no dispute about that. That is a shorter perception-reaction time because it doesn't require him to disengage and reengage like you do with taking your foot off the pedal and putting it back down. So -- so that's a shorter perception-reaction

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time.

Now, again, that's going to be variable. We know it's under 1.25, but the average is going to be variable for the quick person and the slow person, I will say.

Okay. There are things called perception-reaction time experts. We didn't hire him to be a perception-reaction time expert. They actually have one called Dr. Krauss. And when I took Dr. Krauss's deposition, we went through these variables. We went through slower and faster perception-reaction time.

And so what they have done is they've used the worst possible perception-reaction time, 1.25, which is not applicable to this case. They admit it's not applicable because it's not a gas off/brake on situation; it's a steering situation.

So they've used the 1.25, and they've constructed this artificial, oh, the bike must have been -- I can't remember what it was -- 22 feet in front to argue to the jury that, oh, he could have seen him if he was 22 feet in front.

All I'm suggesting is that now we should be allowed to use the real perception-reaction time, which he doesn't know the exact number because he's not a

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perception-reaction time expert. But he does know that it's under the 1.25.

So what I was asking questions about was why the hypothetical is not valid -- because the 1.25 -- and if you use the real perception-reaction time, the steering perception-reaction time, would the distance of the bike be less in front of the bus or even equal with the bus?

That was my question where we got interrupted. And I think I am entitled to ask that because -- especially when this was such an overriding focus of the cross-examination.

THE COURT: So what you want to ask is --

MR. KEMP: I want to ask him that, if you use the real -- well, I won't call it real; I will call it the steering perception-reaction time. If you use the steering perception-reaction time, number one, would it be faster? And how does this impact how far the bike -- the bus would travel? Would be less or would it be greater? That's all I wanted to ask him, Your Honor. And I think those are perfectly appropriate questions under the circumstances.

MR. TERRY: The specific objection was the witness has already declared that he does not know the perception-reaction time for steering maneuver. So any

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answer he gives based on a value he does not know has to be speculation. He -- he knows it's less, but he doesn't know how much less. For Mr. Kemp to suggest it could be half, less, or something else is not fair to a man who does not know what the value is.

The only objection was not any -- the other stuff; it was he doesn't know what the value is. He shouldn't be allowed to calculate on the basis of the number he doesn't know.

MR. KEMP: Your Honor, he also specifically said that the 1.25 was not the value in this case. He said that. He said that both on cross and on redirect. He said that 1.25. And yet Mr. Terry used the 1.25 figure over and over and over again, at least three different times, constructing these hypotheticals.

So for him to suggest that I can't use a figure other than 1.25 -- and I wasn't going to use a specific figure. I was going to say it's less than and ask for the -- how that would affect the distances. That's all I was going to do.

MR. TERRY: I'm not sure why he keeps saying I used 1.25, because what I used was the figure suggested by his witness as what the witness would use if he was making the calculations.

THE COURT: I guess for me, I don't

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understand, if someone is being deposed about what the -- what the pertinent perception-reaction time in this case is, and if it is a -- the other one --

MR. KEMP: Judge, he's not the perception-reaction expert. Okay? I mean, you know, if they go into perception-reaction time with a non-perception-reaction time expert, that's one thing. If it's with a perception-reaction time expert and they laid the hypothetical out, I would agree with you. But that's not what they did. And this is not in dispute. If you would like, I will bring Dr. Krauss's book in here on Monday and I will show you his perception-reaction time calculations.

THE COURT: Well, I have a -- he's already said it's less.

MR. KEMP: He has said it's less.

THE COURT: But I don't feel comfortable with him calculating -- going through a calculation.

MR. KEMP: I'm -- I didn't ask him that. I was going to ask if the -- if the distances would be less. That's all I was going to ask him. If the perception-reaction time is quicker, the bus is not going to travel the same amount of feet.

MR. TERRY: I don't oppose that question. That one question. If the perception-reaction time is

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less, would the distances be closer, less, however you --

MR. KEMP: It's not just one question. I got to set it up again because I got to set up what we're talking about. It's not just one question. I have to set up that there's a different one for this and a different one for that because we've had this extended break, and then say --

MR. TERRY: You know, for him to say, A, the man is not a perception-reaction time expert and then going to say "I'm going to ask him about the different perception-reaction times," I did not object when he asked if it was less because I think that's within his -- all the rest of it, no.

If all we're going to ask him is if the perception-reaction time is less than 1.25, are the distances shorter or less? I have no objection to that. The rest of it is asking him to make calculations on the basis of an expertise Mr. Kemp admits he doesn't have on the basis of him -- a value he admits he doesn't know.

MR. KEMP: Judge, he told him in the deposition that he had not done a perception-reaction time calculation. He told him right in the deposition, and then they continued on in the deposition. And now

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they've used something he has not done to lay out a scenario to the jury that he's repeatedly said is not accurate, I'm entitled to show why.

Otherwise, you're letting him paint a false picture to the jury. This is a false picture to the jury using a perception-reaction time that's not applicable. I mean, they admit it's not applicable because that's the gas-to-brake one; that's not the steering one. They admit it's not applicable. And yet they've used it all afternoon.

MR. TERRY: I don't admit it's not applicable. He said that's the one he would use.

MR. KEMP: He did not say that's the one he would use in this case. He specifically said on the witness stand that your assumptions were not valid.

THE COURT: In fairness, it's the one I read.

MR. KEMP: If you accept --

THE COURT: It's the one I read in the deposition a few minutes ago when you were at the bench.

MR. KEMP: Your Honor, here's his question:

"If Mr. Hubbard was driving the bus, and we have the 45-foot picture --

"ANSWER: If you accept that that was his actual response time, which I don't.

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"QUESTION: -- using it as the average response time for people in daylight, if his response is 1.25 seconds."

And then his answer was "Only in this abstraction."

All I'm doing is I'm pointing out to the jury that this is not the correct figure, it's not applicable. And they don't disagree with that. I'll bring in Dr. Krauss's book if you would like. They don't disagree with that.

All I'm asking, is it going to be less than the 45 feet, because they've created the impression on this jury that the bike was 22 feet, I think it is, in front.

THE COURT: All right. You can go as far as less than the 45 feet, but I don't want --

MR. KEMP: I'm not going to ask him how much less, Your Honor.

THE COURT: And many, many questions about it. I think we need to move on. Okay? Once you do that. And that's about as far as we go with this witness --

MR. KEMP: Thank you, Your Honor.

THE COURT: -- in this area. Okay.

All right. Is everyone ready? Do you need a quick break?

MR. BARGER: Can we have two minutes?

THE COURT: Yes.

(Whereupon a short recess was taken.)

THE COURT: Ready.

THE MARSHAL: All rise for the jury.

(The following proceedings were held in the presence of the jury.)

THE MARSHAL: All jurors accounted for, Your Honor.

THE COURT: Okay. Very good.

Stipulate to the jury's presence?

MR. TERRY: So stipulated.

MR. KEMP: Stipulated.

THE COURT: Mr. Kemp.

BY MR. KEMP:

Q. Okay. Mr. Sherlock, let's try to get you to your plane so you can go enjoy the snow in D.C. I hear there's a lot of it.

Okay. So we were talking about the difference between perception-reaction time in a gas-and-brake situation and in a steering situation. Okay? You with me?

A. Yes.

Q. All right. And you've said that the steering

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situation is less?

A. It takes less time to respond through steering, yes.

Q. Okay. Now, if it takes less time to respond to steering in terms of steering away, would the bus travel more or less distance than Mr. Terry's hypothetical?

A. Less distance.

Q. Now, final area, transit buses versus motor coaches. Correct?

A. Correct.

Q. And what is the basic difference between the two?

A. There are a number. Height is the one that's really obvious. The municipal transit bus has a low floor. This has a very high floor with luggage underneath. The suspensions are different. The doors are different.

Q. Okay. And with regards to the safety issues we're talking about today -- right side, blind spots, proximity sensors, and aerodynamics -- is there any difference between the two types of buses?

A. The blind spots in this are generally quite a bit worse, particularly on the right, because of that enormously high dash and the door that has a big

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opaque, can't-see-through-it kind of a section.
Q. And when you said "this," you mean the blind spots in coaches are generally worse than transit buses?
A. Correct.
Q. And does that argue for or against having proximity sensors on coaches?
A. For.
Q. Why is that?
A. They're more needed. You have a bigger blind spot. You have more need for mitigation, something that will help you out in those areas.
MR. KEMP: Okay. No further questions.
THE COURT: Okay.
MR. TERRY: No questions, Your Honor.
THE COURT: All right. Thank you.
We have questions from the jurors. Okay. Counsel, would you like to approach?
MR. KEMP: Oh, we do? Sorry.
(A discussion was held at the bench, not reported.)
THE COURT: All right. All right. I'm going to ask the questions that the attorneys have agreed on and that the Court agrees with.
By the way, there were other questions that

are very good questions, but they would probably be better asked -- or answered by a different witness. That's why they may not be read. Okay?

All right. One of the questions the jury poses is "At what point in the bus driver's line of sight does the blind spot come into play?"

THE WITNESS: That's sort of a complicated question. There's -- as he's driving down the road, he's repeating -- or repeatedly saying he's got to bob and weave in the seat all the time to see around all these obstructions. So it's taking his eyes off the road in a way where he ought to be able to just see everything easily. So it's a little complicated in that that's a factor number.

In this case, the blind spot for the bicyclist, as he's approaching, you can see where, from that image that you saw with the bike of the right front, that the dash and all of that obstructs as the bike gets close to the bus. And I don't know the distance in which that begins to occur. I didn't compute that. My suspicion is that when Fat Pencil arrives, you'll be able to get a very precise answer to that based on the 3-D model where they can put the camera in the driver's eye sockets, basically.

THE COURT: Thank you, sir. And the second

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part of the question is "How many feet away from the bus, if you know?"

THE WITNESS: Yeah, that was sort of part of that answer. I really can't give you a precise number.

THE COURT: Okay. Thank you. All right.

The next question is "How far ahead can the sensor detect an object ahead of a vehicle?"

THE WITNESS: It depends on the kind of sensor. The Eaton system we're talking about, 350 feet in front. They're limited to the side because they have all the clutter on the side of the road that would otherwise swamp the sensors and drive you crazy. So it varies depending on angle, but it could be a very long ways.

THE COURT: Okay. Thank you.

Another question: "Explain or clarify leading-edge suction pertaining to this bus."

THE WITNESS: Yeah. This is a real surprising concept. Leading-edge suction is where you have square leading edges on an object that's moving through a fluid, and air is a fluid. So what happens is the air moves toward the vehicle, and then it reaches a point of stagnation, they call it, where it just can't get any closer, pressure starts to build, and then it goes out to the sides.

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And as it does that, it has momentum. And when it tries to go around the corners, that momentum carries it wide. So the air on the side doesn't go around like in a well-designed vehicle; it shoots out to the sides. And that creates a pressure wave where that jet of air is coming off, and that would push a bicyclist away.

This is well studied. There's a Kato paper that you'll probably see that goes into this in detail. So it pushes the rider away, and then it sucks them in, because right behind that pressure wave is an area that's a partial vacuum. And that's what led to these problems I was talking about with air quality, all these other things.

THE COURT: Thank you.

"Do you know the exact width of the A-pillar on this bus?"

THE WITNESS: I don't know the exact number.

THE COURT: Okay. The next question is -- reads this way: "Did Mr. Sherlock himself do the measurements on the window, the pillar, the door, and the dash?"

THE WITNESS: No. The only thing I measured on these is the base of the windshield, and everything else was done by Fat Pencil and the accident

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reconstructionist.

THE COURT: Or the -- "Or the measurements, did they come with the manufacturer?"

THE WITNESS: I don't know if any manufacturer-generated numbers were used. My suspicion is that they were not. I think they used a laser scanning technique and a computerized model.

THE COURT: Thank you. This one, I'm going to answer for you. The question is "Will we view the Fat Pencil simulation?"

The attorneys have indicated that it will probably be presented later through a different witness. Okay?

Thank you, sir.

THE WITNESS: Thank you.

THE COURT: You're excused.

Okay.

MR. KEMP: Your Honor, could we have Mr. Lamothe's video.

THE COURT: Okay.

MR. KEMP: Excuse me?

Mr. Ellis's video.

THE COURT: No, not Mr. Ellis today. Mr. Lamothe.

MR. KEMP: Lamothe today?

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THE COURT: Today, yes. And before that I would like to speak very briefly to Mr. Pepperman and Mr. Russell before we -- just for a moment.

(A discussion was held at the bench, not reported.)

THE COURT: All right. All right. Do you -- it appears that we still have to discuss a couple of points on Mr. Lamothe's, plus it's an hour. It takes an hour.

MR. KEMP: It's a 58-minute deposition, Your Honor. So if you want to break now --

THE COURT: I think we're going to -- we are going to break for the weekend now. Okay? So I'm going to admonish the jury.

You're instructed not to talk with each other or with anyone else about any subject or issue connected with this trial. You are not to read, watch, or listen to any report of or commentary on the trial by any person connected with this case or by any medium of information, including, without limitation, newspapers, television, the Internet, or radio.

You are not to conduct any research on your own relating to this case, such as consulting dictionaries, using the Internet, or using reference materials.

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You are not to conduct any investigation, test any theory of the case, re-create any aspect of the case, or in any other way investigate or learn about the case on your own.

You are not to talk with others, text others, tweet others, google issues, or conduct any other kind of book or computer research with regard to any issue, party, witness, or attorney involved in this case.

You're not to form or express any opinion on any subject connected with this trial until the case is finally submitted to you.

Thank you, ladies and gentlemen, for being so attentive and following through with your duty this week. Let's see you Monday morning at 9:30. Okay? Thank you.

THE MARSHAL: All rise for the jury.

(The following proceedings were held outside the presence of the jury.)

THE COURT: I will be back.

(Discussion was held off the record.)

THE COURT: Okay. We -- we can go off the record. We are off the record.

(Thereupon, the proceedings concluded at 4:10 p.m.)

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ATTEST: FULL, TRUE, AND ACCURATE TRANSCRIPT OF PROCEEDINGS.

Kristy Clark

KRISTY L. CLARK, CCR #708

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CASE NO. A-17-755977-C

DEPT. NO. 14

DOCKET U

DISTRICT COURT

CLARK COUNTY, NEVADA

* * * * *

KEON KHIABANI and ARIA KHIABANI, minors by and through their natural mother, KATAYOUN BARIN; KATAYOUN BARIN, individually; KATAYOUN BARIN as Executrix of the Estate of Kayvan Khiabani, M.D. (Decedent) and the Estate of Kayvan Khiabani, M.D. (Decedent),

Plaintiffs,

vs.

MOTOR COACH INDUSTRIES, INC., a Delaware corporation; MICHELANGELO LEASING, INC. d/b/a RYAN'S EXPRESS, an Arizona corporation; EDWARD HUBBARD, a Nevada resident, et al.,

Defendants.

REPORTER'S TRANSCRIPTION OF PROCEEDINGS

BEFORE THE HONORABLE ADRIANA ESCOBAR
DEPARTMENT XIV
DATED MONDAY, MARCH 5, 2018

RECORDED BY: SANDY ANDERSON, COURT RECORDER

TRANSCRIBED BY: KIMBERLY A. FARKAS, NV CCR No. 741

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I N D E X

Witness:	Direct:	Cross:	Redirect:	Recross:
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LAS VEGAS, NEVADA, MONDAY, MARCH 5, 2018;

10:05 A.M.

P R O C E E D I N G S

* * * * * * *

THE MARSHAL: All rise. Department 14 is now in session with the Honorable Adriana Escobar presiding.

THE COURT: Good morning.

MR. TERRY: Your Honor, may we approach before the jury comes in?

THE COURT: Of course.

(A discussion was held at the bench, not reported.)

THE COURT: Are we ready for the jury, everybody?

MR. TERRY: Yes, Your Honor.

THE COURT: Okay.

THE MARSHAL: All rise. All the jurors are present, Your Honor.

THE COURT: Okay. Very good.

Good morning.

THE MARSHAL: Come to order.

THE COURT: Do the parties stipulate to the presence of the jury?

MR. CHRISTIANSEN: Yes, Your Honor.

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MR. ROBERTS: Yes, Your Honor.
THE COURT: Call roll, please.
THE CLERK: Yes, Your Honor.
Byron Lennon.
JUROR NO. 1: Here.
THE CLERK: John Toston.
JUROR NO. 2: Here.
THE CLERK: Michelle Peligro.
JUROR NO. 3: Here.
THE CLERK: Raphael Javier.
JUROR NO. 4: Here.
THE CLERK: Dylan Domingo.
JUROR NO. 5: Here.
THE CLERK: Aberash Getaneh.
JUROR NO. 6: Here.
THE CLERK: Jaymi Johnson.
JUROR NO. 7: Here.
THE CLERK: Constance Brown.
JUROR NO. 8: Here.
THE CLERK: Enrique Tuquero.
JUROR NO. 9: Here.
THE CLERK: Raquel Romero.
JUROR NO. 10: Here.
THE CLERK: Pamela Phillips-Chong.
JUROR NO. 11: Here.

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THE CLERK: Gregg Stephens.
JUROR NO. 12: Here.
THE CLERK: Glenn Krieger.
JUROR NO. 13: Here.
THE CLERK: Emilie Mosqueda.
JUROR NO. 14: Here.
THE COURT: Good morning, ladies and gentlemen. I hope you had a great weekend. Thank you for being with us again today. And I just want to remind you that you're under oath. Okay?
All right. Very good.
Mr. Kemp, are you ready to proceed?
MR. KEMP: Yes, Your Honor. We'd call Joshua Cohen.
THE COURT: Swear him in, please.
THE CLERK: You do solemnly swear the testimony you're about to give in this action shall be the truth, the whole truth, and nothing but the truth, so help you God?
THE WITNESS: I do.
THE CLERK: Thank you. Please be stated and please state and spell your name.
THE WITNESS: My name is Joshua Cohen. That's spelled J-o-s-h-u-a, C-o-h-e-n.
THE CLERK: Thank you.

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DIRECT EXAMINATION OF JOSHUA COHEN

BY MR. KEMP:

Q. Mr. Cohen, will you tell everybody where you went to college at.

A. Sure. Undergraduate degree from Brown University in Providence, Rhode Island. And that's in civil engineering.

And graduate degree in architecture from the University of Oregon in Eugene.

Q. Okay. And when did you get the civil engineering degree from Brown University?

A. 1993.

Q. And when did you get the master of architecture degree from University of Oregon?

A. 2003.

Q. What is holography?

A. Holography would be the study of holograms, so essentially making 3-D pictures with lasers and objects.

Q. Have you studied holography?

A. Yes.

Q. What is perspective drawing?

A. Perspective drawing would be the creation of an image on paper that has the appearance of a three-dimensional image. It's

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used a lot in architectural renderings.

Q. Have you studied perspective drawing?

A. Yes.

Q. And what is photogrammetry?

A. So photogrammetry is the science of obtaining reliable information about physical objects through the process of interpreting images.

Q. Okay. And that's how you spell it, photogrammetry?

A. Yes.

Q. Can you explain a little more what it is?

A. Sure. It's an old science. It existed even before photography. And it's been used for long-range applications, for example, targeting artillery or calibrating aerial photographs so that you can measure objects on the ground. This is an image from Google maps. And if you're familiar with that, you can measure objects on the ground.

It's also used for short-range applications like creating three-dimensional models of archeological ruins or, in forensics, in analyzing the crush damage to a vehicle.

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Q. And what is 3-D visualization?
A. 3-D visualization would be the creation of digital models that can be viewed from any perspective using a virtual camera.
Q. Okay. And is this done with a computer?
A. Yes.
Q. Is there a standard program you use?
A. There's many. I personally use a program called Trimble SketchUp.
Q. Trimble SketchUp?
A. Trimble is the company, and SketchUp is the name of the software.
Q. Have they gone through a number of editions?
A. Yes.
Q. You use the most recent?
A. I do.
Q. And have you studied 3-D visualization?
A. Not in school; it's professional experience.
Q. What's the difference between photogrammetry and 3-D visualization?
A. Well, we use them together in similar circumstances. And these are some examples of what you might be familiar with -- it's -- 3-D

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visualization is used for. And then we use them together to take items that might be inside of a three-dimensional model, a digital 3-D model, and put them into a photograph.

And it can also work in the reverse. So if you have a photograph of an event and you wanted to find out where those items are in real space, you can actually put them into a 3-D model. And that's closer to the work that we're doing in this case.

And I probably should point out as well, while we do use photogrammetry and 3-D visualization together, they are not the same thing. Using 3-D visualization, you can actually test a whole variety of circumstances in the 3-D model, some based on a science like photogrammetry, others might be based on witness statements, and other examples that we might test would be basically hypothetical.

You'll see all three of those today, and it's important to think about the foundation or the evidence that you'll see inside of the 3-D visualization. Just because you see a picture on the screen doesn't mean it's based on a strong foundation. The photogrammetry is a science we

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use to get strong foundation for the position of objects.

Q. And the jury has heard the term "Fat Pencil." Are you familiar with that term?

A. I am.

Q. What is Fat Pencil?

A. Fat Pencil Studio is the name of the company that I founded in 2004.

Q. How many employees do you have?

A. We have a total of four on staff, including me.

Q. And where is that company located at?

A. We're located in Portland, Oregon.

Q. Can you describe some of the projects Fat Pencil has worked on --

A. Sure.

Q. -- besides this project.

A. Yep.

So the first one I'm going to bring up is a project we worked on in Henderson, Nevada, to visualize a new bridge that's being built at the Stephanie Street overpass, as well as the enlargement of a culvert that was happening about a mile away. With the complex logistics going on in a construction project like this, the local contractor, Meadow Valley Contractors, hired us to help them explain to a selection committee how they intended to deal with traffic impacts as well as equipment on the site.

So, for example, at the culvert, you can see from an aerial and a ground view --

Q. Back up to that.

A. Here?

Q. Before. So can you just tell the jury how you did this, how you came up with this?

A. Sure.

Q. In general.

A. In general, we have, in this project, a set of design drawings. We used those drawings to create an accurate rendition of the existing conditions and then plan projects. And then we worked with the contractors to show logistics, like equipment and materials that they're bringing into the site, and help them figure out what was the best way to actually realize the project and then explain it to the selection committee.

Q. Did you take an actual aerial to start out this visualization?

A. We used an aerial photograph as the basis for the existing conditions of the roadway,

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the stripes and that sort of thing.

Q. So you took a real photograph and then you projected items onto it?

A. We drew right on top of that photograph in 3-D modeling, yep.

Q. Can I see a couple more?

A. So here you can see them expanding the culvert to have more capacity.

Q. So, in other words, they're building it wider?

A. Correct.

Q. So more water can go out to the lake?

A. Correct.

Q. And, in this case, they're just putting a new -- what do you call those? -- holes? openings?

A. Right. They use these sort of large precast concrete box members. And you can see them lifting one in by crane. And part of our work was just to help them figure out how to deal with the sequence.

You know, when they're digging a hole in one place, they've got to have those lanes closed. So in order to do that, they have to reroute traffic and try to figure out the most efficient

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way to do that.

Q. And did you prepare a video for this Henderson project?

A. I don't have it on here, but we have a couple other shots of the bridge and two different ways of building it, either steel or precast concrete.

Q. Can you give the jury an example of another project that Fat Pencil and you have worked on.

A. Sure.

This is a video of the steel bridge in Portland, Oregon. It's about a 100-year-old bridge that carries heavy rail -- freight trains below, light rail above, vehicles above, pedestrians and bikes on both levels. And it's got a rather unique two-stage lift mechanism. And we did this project to visualize how the lift mechanism works.

I also use it when I go talk to third graders that have a bridge -- Portland bridge as part of their curriculum. So they like to see how these things work in the computer as well as going out to see them in person.

Q. Okay. And who did you do that for?

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A. That one, we did as an internal project. So it was done with internal staff to put on our website.

Q. Have you done 3-D visualizations for other bus accidents besides this case?

A. Yes.

Q. How many times?

A. We've worked on a total of six cases, including this one, that involve buses. Only two of those have gone to trial.

Q. And did any of those other bus accident cases involve blind spots?

A. Yes.

Q. How many?

A. Five.

MR. KEMP: Your Honor, we tender Mr. Cohen as an expert on photogrammetry and 3-D visualization.

MR. TERRY: Your Honor, we have no objection to the tender.

THE COURT: Okay.

BY MR. KEMP:

Q. Mr. Cohen, can you give the jury a general description of what you did in this case.

A. So in this case we were asked to, number one, create a digital 3-D model of the intersection where the collision occurred. And, in addition, the camera located on top of the Red Rock Casino & Resort which saw the bus moving through the intersection was something we were able to analyze using photogrammetry to understand the actual path that the bus took through the intersection.

There's a number of individual frames that make up that video. We were able to analyze those frames and place the bus where it's shown in those frames throughout the time that it goes through the intersection. And we used that information to help us understand the collision.

Q. Okay. And you say you used the actual video to place the bus. Where did you place the bus?

A. Can I show some images of that?

Q. Well, we'll get to that. You placed the bus in what?

A. In the digital 3-D model.

Q. And you used the actual Red Rock video to place the bus?

A. Correct.

Q. How many Red Rock images did you have that showed the bus going through the intersection?

A. You know, there's probably 40-plus images that show the bus at some point through the intersection. We only matched the ones that occurred before and then right after the collision, so about -- a little over 20.

Q. Okay. And did the Red Rock video help you determine where the bike was during the incident?

A. There are a few images from the Red Rock video where you can see a dark shape that we determined is consistent with the profile of Dr. Khiabani. In only one of those images do we think we know where the bike is because that seems consistent with the time that the bike initially collided with the bus and left a mark on the bus.

So because we know where the bus is, we can infer where we think the bike is in that one frame.

Q. Okay. So you looked at the Red Rock video. What else?

A. We also looked at the geometry of the intersection. So we used aerial photographs as well as what's called laser scan. A laser scan is a picture of a whole bunch of points that you can open up on a computer and measure distances between things. And then we used similar --

Q. So -- stop.

So you had a laser scan of the actual intersection?

A. Correct.

Q. Okay. Go ahead.

A. We also had a laser scan that was taken during an inspection of the bus and the bike. So we have a way to get accurate dimensions of the bus as well as the bicycle.

Q. And the laser scan you have of the bus, was that taken inside and outside the bus or what?

A. Both.

Q. So you have a laser scan all the way around the actual bus that was used in the incident.

A. Yes.

Q. And you have a laser scan from the inside of the bus?

A. Correct.

Q. And did you examine the points of view of the driver, the passenger behind the driver, and the driver -- the right-hand seat?

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A. I sat in both the driver's seat as well as the two front passenger seats on either side of the aisle and took pictures and video.

Q. And so the driver would be Mr. Hubbard?

A. Correct.

Q. And the passenger behind him would be Mr. Pears -- excuse me -- Plantz?

A. Plantz would be behind the driver.

Q. Okay. And who, if you remember, is to the right in the window?

A. Mr. Pears.

Q. Now, with regards to Mr. -- where Mr. Plantz is sitting, did you sit in his seat yourself?

A. I did.

Q. And is that seat flush with Mr. Pears' seat or is there a difference in how the seats are lined up?

A. There is a difference in how they're lined up.

Q. And what is the difference?

A. You know, I'm having a little trouble recalling exactly off the top of my head, but we could certainly look at that when we get the pictures open.

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Q. Okay. Now, getting to the model. You prepared a model -- a 3-D visualization model of the bus and intersection?
A. Correct.
Q. Okay. And just tell the jury in general what that model depicts.
A. Well, the model depicts the intersection itself and the context surrounding the intersection as well as a rough model of the building, the Red Rock Resort, and a camera that sits atop that resort. And then there's stripes on the street and other, what I would call, reference points, including poles and light posts and trees that were helpful to us in making sure that we had an accurate match between the camera in the model and the camera from the Red Rock Casino. We needed that to be sure the photogrammetry process was accurate.
Q. Okay. And can that model be manipulated in that you can move the bus up and down?
A. We can.
Q. And, in this case, you used the pictures of the Red Rock where the bus actually was?
A. Yes.
Q. And -- through the incident until you

couldn't see the bus anymore, you used those pictures?

A. Right. We used the pictures of the bus -- we put bus points in for -- from when it enters the intersection until it's clearly past the point where the collision occurred.

Q. Okay. So anything we see in the model from this point forward, that's the actual bus; right?

A. That's the bus positions.

Q. So that's photogrammetry. That's the real position of the bus?

A. Right, from the time it enters the intersection through the intersection.

Q. Okay. So there's no assumption whatsoever from when you first see the bus until it goes through the intersection; that's the actual evidence?

A. Right. And I'll make sure to highlight that.

Q. Okay. Now, can you also manipulate the model to move the bus back?

A. Yes.

Q. And when you do that, that's not based on actual evidence, or is it?

A. That would be hypothetical. In other words, what would it look like if the bus was back here? It's not based on a scientific inquiry process.
Q. And the reason you couldn't use actual evidence is because the Red Rock video didn't go back that far?
A. That's right.
Q. Now, with regards to the bus placement in the model, that's -- excuse me -- the bike placement in the model, did you place a bike in a physical location in the model?
A. Yes.
Q. Okay. And what was that based on?
A. Well, you'll see the bike appear at a few places in the model. The one probably that's of most concern is the location where the bike initially collides with the bus. And that's supported by a black mark that was left on the bus just behind the front wheel well.
Q. Okay. And the first placement we're going to see of the bike and the bus is based on what?
A. Well, in this video footage, there's a dark shape that appears in a few of those frames.

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And we were able to determine that, by putting a bike up next to the bus and comparing where it fell on those frames, there was one frame in particular that was consistent with both the position of the dark shape in the Red Rock security footage and also the bike being right next to the bus at that impact point.

So that seemed like the best fit for the initial collision.

Q. Did you look at the witness testimony of Mrs. Bradley?

A. I did.

Q. And did you also look at the overhead shot of where she placed the bike in relationship to the bus at the north side of the crosswalk?

A. Yes.

Q. And did you look at the same for Mrs. Kolch, or Samantha Kolch?

A. Yes.

Q. And she's the bicycle rider?

A. Motorcycle rider.

Q. Motorcycle rider, right.

So you were able to put the bike in the exact location that Bradley and Kolch has it in your mind?

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A. Right. They had exhibits that show them placing the bike next to the bus, so I just duplicated what they had shown in their exhibits.

Q. And using that placement, are you able to indicate what the driver could see, what Mr. Plantz could see, and what Mr. Pears could see, if anything, if the bike is exactly where Kolch and Bradley place it?

A. Yes.

Q. All right. Can you show -- just using Red Rock 176, can you show the jury just in general how this process works?

A. Sure. Okay. This is a snapshot of the intersection. We're looking at an aerial photograph with some 3-D content superimposed.

Q. And can you manipulate the aerial around a couple times --

A. Oh, sure.

Q. -- just to show the jury what you can do?

A. Yeah. So in a 3-D model, it's possible to look at it from any perspective that we want. So I'm using a tool called an orbit tool right now to -- I can zoom in and out, I can move it back and forth, and we can look at it from any angle.

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And in particular, you know, I was very interested in where this camera perched atop the Red Rock Casino is located. Because when we go into that camera picture -- I can sort of zoom into that now. That's the size here.

Q. So what we have to the left is the actual Red Rock video; correct?

A. Right now you're looking at a frame from the Red Rock video. I'm calling it 176 because it's a time stamp. So 10:34:17.6 seconds. I'm using the last 3 digits from that time stamp. And what you'll see is that we can move back and forth between --

Q. Okay. Slow down. So when we call this 176, that's 176 on the actual Red Rock time stamp?

A. Right. You'll see down in the lower left corner you'll see it says 10:34:17, and then it's the sixth frame in that series. So it's 17.6 seconds.

Q. And there's actually a frame behind this where you first see the bus?

A. Yes, the frame behind that's 175.

Q. All right. So just show the jury how you used this to create your visual model.

A. So to make sure that we have an accurate match for photogrammetry, we need to make sure that the camera position that we're looking at the model from matches the camera position in the -- that was used to take that footage from the Red Rock. And there are these reference points that we use, like light poles and trees, to make sure those vertical elements all line up.

So here's the model. You can see all those reference points lining up.

Q. Let's go from real to model a couple times just to show the jury what we're doing here.

A. So this is the real image. Here's the 3-D model.

Q. Okay. Great. And you did this with how many Red Rock frames?

A. I've got about 23 in here, 22, 23.

Q. So in the model, every time we see the bus in your model, that's where the bus actually is as indicated by the Red Rock video?

A. Yes, from frames 174 on. And there's a couple that we may get to that area earlier, but those are not based on photogrammetry, and I'll point that out when it comes to it.

Q. Let's use frame 182 and show the jury again how it matches up.

A. Okay. So this is frame 182 again going from -- here's the model and back to the Red Rock footage.

Q. Okay. And real quick, let's look at 187 and show the jury how it matches up. And how about 197?

Okay. Now, you said you've looked at Ms. Bradley's testimony and Ms. Kolch's testimony?

A. Yes.

Q. And more specifically, you've looked at the pictures that were taken at their depositions and that they discussed here at trial that shows exactly where they placed the bike in relationship to the bus; right?

A. Yep. This is Ms. Bradley's deposition testimony exhibit, and this is Ms. Kolch's exhibit.

Q. Okay. And using the placement by those two witnesses, can you place the bike in the model?

A. So lets get something similar to those exhibits.

Q. And this is from Red Rock video 175?

A. Yes, this is frame 175, which is the most similar to what was in those two depositions.

Q. So that position in that model of the bus is where it actually is in the Red Rock video?
A. At frame 175, yes.
Q. Not a foot this way, not a foot that way, that's where it really is in the Red Rock video?
A. Correct.
Q. And the bike is where Bradley and Kolch had placed it?
A. Yes.
MR. TERRY: Objection, Your Honor. My recollection is that Samantha Kolch put the bike in the middle of the bike lane, not to the left side.
MR. KEMP: Your Honor, he can explore that on cross-examination. I don't even know if that was an objection, Your Honor. I didn't hear an objection stated.
MR. TERRY: Can we approach?
MR. KEMP: I mean, come on, Judge. He shouldn't be doing this in --
THE COURT: I'd like you to approach, please.
(A discussion was held at the bench, not reported.)

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BY MR. KEMP:

Q. Mr. Cohen, in this depiction, how far away is the bike from the bus?

A. So I'm going to measure that now from the handlebar to the bus.

2 1/2 feet.

Q. 2 1/2 feet. And do you recall how far away Kolch and Bradley said the bike was from the bus when they observed it?

A. I don't recall.

Q. All right. So using the 2 1/2 feet, are you able to -- well, first of all, can you -- have you prepared an exhibit that shows the overhead of this position?

A. Yes.

Q. All right. Is this 175?

A. Yes.

Q. Let's start with 174.

A. 174?

Q. This is 175. Let's just stick with it.

A. Okay.

Q. Will you look at Exhibit 238 and tell me if that's what we have on the screen?

A. Yes, it is.

MR. KEMP: Your Honor, move to admit.

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THE COURT: I believe there's no objection; yes?

MR. TERRY: I'm sorry. Which one are we offering?

MR. KEMP: 238.

MR. TERRY: Is that the 175A?

THE WITNESS: This is 175.

MR. KEMP: Mr. Terry is right, Your Honor. This is 239.

BY MR. KEMP:

Q. Can I show you 239.

A. So 239 is what we see on the screen right now.

MR. KEMP: Your Honor, I'd move to admit 239.

MR. TERRY: Is this 174 top?

MR. KEMP: Yeah, 174 top.

MR. TERRY: No objection.

THE COURT: So moved. It's in evidence.

BY MR. KEMP:

Q. Now, using this, are you able to determine what the driver can see if the bus and the bike were in this position?

A. Yes.

Q. And, first, before you do it, can you explain in general to the jury how you can do it.

A. Sure. I'm going to move slow here just to get a better view.

You can see, inside the bus, we have a mannequin, a human figure, in the driver's seat. And I can make the front window go away so it's easier to get in here and put a camera right at the driver's eye position looking in this direction. And then we can look around to see what would be visible from that location.

And that's 175, driver view.

Q. And have you prepared an exhibit that shows the driver view on 175?

A. Yes. And this is it, No. 240.

MR. KEMP: Your Honor, I'd move to admit 240.

MR. TERRY: No objection, Your Honor.

THE COURT: Exhibit 240 is admitted.

(Whereupon, Exhibit 240 admitted into evidence.)

BY MR. KEMP:

Q. Now, what is -- in fact, where is my -- now, can we see the bike in this picture?

A. Yes.

Q. The bike?

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A. The only part of the actual bicycle that's visible is just the wheel here below in this lower panel of the door.
Q. Okay. And what is this area right here?
A. That's a side panel in the door.
Q. That's an opaque door?
A. That's an opaque portion of the door, yes.
Q. And this is what your model indicates the driver would have seen when the bus is in the placement that we have as indicated in the exhibit we admitted; right?
A. If you were looking in that direction, you would have seen something substantially similar to what's on screen here.
Q. This is if he's looking directly at this direction?
A. Correct.
Q. If he's looking straight, obviously, he wouldn't see anything here?
A. Correct.
Q. Okay. Now -- so this is the opaque door; correct?
A. Yes.
Q. Okay. What is this thing here that's

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blocking out part of the bicycle?
A. That's a part of the structure of the bus known as the A-pillar.
Q. Okay. And the front wheel of the bicycle would have been right about here?
A. It would be right in this area.
Q. Okay. And what is this thing that's blocking the view of the front wheel of the bicycle?
A. I guess I would call that part of the dashboard. I'm not an expert on bus terminology, but that's --
Q. Okay. So, in your model, the driver's view of the bicycle is blocked by the opaque door, the A-pillar, and the dash; is that correct?
A. That's correct.
Q. All right. Now, you've said we can change this model to move the bus back and forth; right?
A. That's right.
Q. Okay. And this is -- this model depicts where the bus actually was in the Red Rock video?
A. At frame 175, that's right.
Q. Okay. Can you move the bus back to frame 174?

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A. Sure. So I'm going to go back up to the top now. And I'll turn on -- let's move to frame 174. You can see that it's going to move back a little bit.

Q. Okay. And have you prepared an overview of 174 as an exhibit?

A. Yes.

MR. KEMP: Did I give you 239?

THE CLERK: I wrote on it.

THE COURT: I thought 239 was 175.

MR. KEMP: What's next in order?

THE CLERK: The next one is 241. Is that what this is?

MR. TERRY: Your Honor, may we approach for just a moment?

THE COURT: Yes.

(A discussion was held at the bench, not reported.)

BY MR. KEMP:

Q. Is Exhibit 241 what you have on the screen there?

A. Yes, it is.

MR. KEMP: Your Honor, I'd move to admit 241.

THE COURT: Exhibit 241 is admitted.

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(Whereupon, Exhibit 241 was admitted
into evidence.)

BY MR. KEMP:

Q. Now, have you --

MR. TERRY: Which one is 241?

MR. KEMP: 241 is the one on the screen.

MR. TERRY: Which is?

THE COURT: 241 is 174; right?

BY MR. KEMP:

Q. 241 is frame 174, the driver overview.

A. 174, top view.

MR. TERRY: No objection, Your Honor.

BY MR. KEMP:

Q. Can you show us what the driver would see if he was looking directly at the bicycle in this location?

A. Yes. So we'll use the same process as before, zooming into the driver view.

Q. Okay. And, again, you see the only part of the bike we can see are the two handlebars?

A. That's correct.

Q. Okay. And what blocks the driver from seeing the rest of the bike?

A. So it's primarily the dashboard and maybe a little bit of this door panel, the opaque

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portion of the door.

Q. So the reason the driver can't see the bike is because of the dash and the opaque door; is that correct?

A. That's right.

Q. And does the side pillar also block part of the driver?

A. A small amount of the side pillar, yeah.

Q. All right. So this would have been -- can I go back -- can you go back to where the bus placement is?

A. Top view.

Q. 174?

A. Yes.

Q. So this is when the bus is slightly further back; right?

A. Yes.

Q. And you've also -- okay. Fair.

Can you also show the jury -- well, can you go back any further than this using the actual bus placement?

A. This is about the limit to what we see in the Red Rock video. Before this, you just don't see enough of the bus to accurately determine the placement.

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Q. So if we go back further, we're speculating or it's a hypothetical?
A. Hypothetical.
Q. Okay. So this is the farthest you can go actually, this one we're seeing right here?
A. This is the furthest position back we could go and still be relying on photogrammetry to guide us in where to position the bus. After that, it's a hypothetical situation.
Q. You've shown us what the driver can see. Can you show us what Mr. Plantz would see, the person seated right behind the driver.
A. Sure. In this position?
Q. Right.
A. Okay.
Q. Okay. And I'm sorry. I forgot to ask you. 174, how far away is the bike from the bus?
A. It's a little -- a small amount closer. It's about 2-foot-3.
Q. And 175 is 2-foot-6?
A. Yes.
Q. All right. Now, in this one, this is what Mr. Plantz would see, the person sitting behind the driver?
A. From position 174, that's right.

Q. And with regards to position 174, can you show us what Mr. Pears would be able to see?
A. Sure.
Q. So Mr. Pears can see the bike if he's looking that way?
A. Correct.
Q. But Mr. Plantz and the bus driver can't?
A. Either very little or none at all, depending on --
Q. Okay.
A. -- where they're facing.
Q. And, just in general, why does your model indicate that Mr. Pears has a better view than either the bus driver or Mr. Plantz?
A. He's sitting right by the window, so he's got an unobstructed view through the window of what's directly to his right.
Q. All right. Now, let's go back to 175.
Can you show the jury what Mr. Plantz can see in this particular video -- let's start with the driver -- driver again.
A. So this is the driver in that situation.
Q. Okay. Let's show them what Plantz could see.
A. Okay. Going to go outside of the bus

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here just to get a better view.

Q. Now, before we continue, does the model show the relationship of Plantz's line of seats to Pears' line of seats?

A. Oh, yeah. Thanks for remembering that. So Plantz's seat is a little further back than Pears' seat.

Q. So Mr. Plantz would have had Mr. Pears and Mr. Pears' seat between his view and the view of the bike; is that correct?

A. Yes.

Q. Now show us Plantz's view.

A. Okay.

Q. And show us -- that's 175; right?

A. Yep.

Q. Let's go back to 174 again.

A. Okay.

Q. Driver view, Plantz's view, and Mr. Pears' view, the one on the far right?

A. Mr. Pears is here. Okay?

Q. That's Mr. Pears' view. All right. Have you reviewed the placement of the bike that Mr. Plantz claimed occurred in his deposition?

A. Yes.

Q. Okay. Can you show -- and it was also

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referred to in opening statement?
A. That would be this exhibit here.
Q. Okay. That's what MCI -- Mr. Plantz, Mr. Terry -- that's their claim that the bike was in the far right turn lane; right?
A. That's right.
Q. Okay. Now, can you show the jury -- and assuming that the bus was traveling 25 and the bike was traveling half that speed, how far would the bus travel and how far would the bike travel?
A. In terms of --
Q. Well, strike that.
Can you move the bus forward to a point where you think the collision occurred?
A. Let's go back to the model. You'd like to see the point where the collision occurred?
Q. Right.
A. In relation to --
Q. Let's do that later. We'll just show the jury where the collision occurred.
A. Okay.
And this is frame 187.
Q. Okay. So that bus position is taken from the actual Red Rock video?
A. That's right.

Q. What is the bike taken from?

A. The bike is an inference on my part because you can see in the Red Rock security footage -- and I'll just show that again just to be clear what I'm talking about.

So right in this area behind the palm leaf you can see a dark profile. And when we put the bike leaning against the bus so that the hood of the handlebar is touching the black marks that were left on the bus, that position of the rider matches up best with this dark profile that you see here as compared with some of the other frames where that dark profile appears.

Q. And you had laser imagery of the bike turned at the angle matching up with that black mark?

A. We had a photograph of the bike that way.

Q. And you put that into the model?

A. We used the photograph. And, in addition, we do have a laser scan of the bicycle so we know the dimensions.

Q. Okay. Show the jury once again in your model where the bike and bus impact at the scuff mark.

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And you've taken out the palm tree so we can see it better?

A. I mean, we have a palm tree in here, but it's a different size than the one that was perfectly aligned at the time of the video.

Q. Now, can you compare this frame with one of the previous frames and determine how far the bus has traveled?

A. Sure. Let's go back to -- which frame are you interested in seeing a comparison?

Q. 174, 175, whichever you think is best.

A. So we'll start with 175, which is here. So between 175 and 187 is 1.2 seconds. And the approximate distance that the bus traveled --

Q. Stop. Stop. Let's slow down.

A. Okay.

Q. So this picture is 1.2 seconds for the bus to get from the place it's at -- what do you call this little line here?

A. Are you talking about the stop line before the crosswalk?

Q. Stop line?

A. Yeah.

Q. So it takes 1.2 seconds for the bus to move from this position to this position?

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A. That's right.
Q. And how do you determine that?
A. Well, we know the position from the Red Rock security footage for each frame. And I know that there is about a tenth of a second for each frame captured in the video. So there's 12 frames, each of them is a tenth of a second. That's 1.2 seconds.
Q. Can you measure that actual distance?
A. Yes. That's about 42 1/2 feet.
Q. So it took the bus how long? 1.2 seconds to go 42 1/2 feet?
A. That's right.
Q. And what does that indicate with regards to how fast the bus is going?
A. I'm going to have to use my calculator. Is that okay?
Q. Yeah. Go ahead.
A. 42.5 feet divided by 1.2 seconds equals 35.4 feet per second and -- would you like me to convert to miles per hour?
Q. Please.
A. So divide by the conversion factor, which is 1.467. That's 24.14 miles per hour.
And I will caution that I was making a

quick measurement there. So if you wanted me to be very precise, I would make sure I was picking the exact right points on each bus that were consistent. It's about 25 miles per hour.

Q. So based on the model with the actual bus movement measurements, you come out 24.14, about 24, 25 miles an hour?

A. Yes.

Q. Okay. Now, assuming for the sake of argument that the bike was going half of that speed. Okay?

A. Okay.

Q. Assuming for the sake of argument the bike is going half that speed, how far would the bike travel from Mr. Plantz's position in that time period, same time period?

A. Have we seen Mr. Plantz's position in the model yet?

Q. I thought you had -- well, can you just use Mr. Plantz's position?

A. This one here; right?

Q. Yeah. Can you put Mr. Plantz's position in the model?

A. Sure. So Mr. Plantz had the bicycle placed -- let me turn that on here --

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approximately here in the right-hand turn lane.

Q. Okay. And if you move the bike at half the speed, 12 miles an hour, for the same amount of seconds it takes the bus to get that distance, how far can the bike go from where Mr. Plantz has it?

A. It depends on the direction. So we kind of put this radius. It's a distance of about 21 feet, so it's roughly half the distance that the bus has traveled.

Q. So if the bike was where Mr. Plantz thought it was, it couldn't have reached the impact point?

A. Unlikely, yeah.

Q. All right. Have you prepared a -- an exhibit for that?

A. I have.

Q. Would you take a look at 242 and tell me if that's what we have on the screen?

A. 242 is indeed what's on the screen.

MR. KEMP: Your Honor, I'd move to admit 242 at the present time.

MR. TERRY: No objection.

THE COURT: Exhibit 242 is admitted.

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(Whereupon, Exhibit 242 admitted into evidence.)

BY MR. KEMP:

Q. Now -- and, again, these bus positions are the actual bus positions from the Red Rock video, correct, on 242?

A. That's correct.

Q. And the bike position in the front is the actual position from the Red Rock video; right?

A. This position?

Q. Yeah.

A. That's the position that matched best with the Red Rock video and the collision point.

Q. And the other bike position, that's Mr. Plantz's testimony. That's not based on any sort of video or other type of evidence; right?

A. That's based on his exhibit from his testimony.

Q. Okay. All right. Now, do you have a visualization that depicts the general function of proximity sensors?

A. Yeah. So I'll switch over to that. And I'll caution that this bus position is hypothetical. This bus and bike position is

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hypothetical. We created this image just as a visual aid to describe -- for someone to describe how a proximity sensor system works.

Q. And you're not an expert on proximity sensors; right?

A. Not more than I hear in commercials, so no.

Q. And by that you mean car commercials?

A. Yeah. Right.

Q. Okay. So this is just kind of a give-the-jury-an-idea visual; correct?

A. Right. That's correct.

Q. Okay. All right.

MR. KEMP: Your Honor, this might be a good place to take a break because this is the issue that Mr. Terry wanted to talk about.

THE COURT: Okay. Very good. Let's take a 15-minute break. I'm going to admonish you.

You're instructed not to talk with each other or with anyone else about any subject or issue connected with this trial. You're not to read, watch, or listen to any report of or commentary on the trial by any person connected with this case or by any medium of information,

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including, without limitation, newspapers, television, the internet, or radio.

You're not to conduct any research on your own relating to this case, such as consulting dictionaries, using the internet, or using any reference materials. You're not to conduct any investigation, test any theory of the case, re-create any aspect of the case, or in any other way investigate or learn about the case on your own.

You're not to talk with others, text others, tweet others, message others, google issues, or conduct any other kind of book or computer research with regard to any issue, party, witness, or attorney involved in this case.

You are not to form or express any opinion on any subject connected with this trial until the case is finally submitted to you.

So let's take a 15-minute break, Marshal.

THE MARSHAL: All rise.

(Jury excused.)

(The following proceedings were held outside the presence of the jury.)

THE MARSHAL: Please be seated. Come to

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order.

OFFER OF PROOF BY MR. KEMP

BY MR. KEMP:

Q. Can you show the next two, the S-1 Gard one, so Your Honor can see what we're talking about.

A. Can you tell me which two you want to see?

Q. The two --

THE COURT: Mr. Kemp, including this one?

MR. KEMP: This is the disputed area, Your Honor.

THE WITNESS: So we're looking at this photo here; is that right?

THE CLERK: Are these ones I haven't seen yet?

BY MR. KEMP:

Q. Correct. And I thought there was a second one.

A. There's one with the S-1 Gard -- these are just exhibits from the report. I should probably show those from the report.

Q. Yeah, show the exhibits from the report.

A. So these are exhibits, that one.

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Q. Okay. That's the first one?
A. No. Hold on.
So there's 15B from the report and No. 20. So this is impact from the rear tire as directed by Dr. Stalnaker.
And then this one is showing an S-1 Gard installed on the bus and some arrows indicating the type of motion that would be likely to occur upon impact with the S-1 Gard.
Q. Okay. The video at the left was -- you said it was directed by Dr. Stalnaker.
A. This image was created while we were on the phone with Dr. Stalnaker sharing screens, and he was saying, you know, "Move the legs this way, move the arms this way, position the helmet this way."
Q. So, in other words, you guys both had the same image up while you're talking?
A. Right. We do this a lot with experts. They essentially were creating images at their direction for their use.
Q. So this is consistent with what you understand his opinion to be?
A. Correct.
Q. Okay. And the one on the right is just

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the exact same position with an S-1 Gard added?

A. That's right.

MR. KEMP: Okay.

Your Honor?

MR. TERRY: May I just ask a couple?

CROSS-EXAMINATION ON OFFER OF PROOF

BY MR. TERRY:

Q. Mr. Cohen, you personally did not reach any opinions about biomechanics, did you?

A. No.

Q. That's outside your area of expertise?

A. That's right.

Q. You were not asked to do it?

A. We were not asked to be a biomechanical expert for this case, that's correct.

Q. So you did not act as a biomechanical expert?

A. No.

Q. Dr. Stalnaker is the biomechanical expert?

A. That's correct.

Q. And you worked with him to prepare an illustration that he could use to show or explain his conclusions or his opinions?

A. It's his direction that we used to

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create the image. And then, beyond that, how it's used is up to the court, I guess.

Q. But the position of the body with the legs where they are and the hands where they are and the head where it is is Dr. Stalnaker's opinion, not yours?

A. That's right.

Q. And the position of the body with respect to the S-1 Gard, do you know how you arrived at the position of the S-1 Gard?

A. The position of the S-1 Gard is based on our inspection of the materials, like I said, a spec sheet that comes with the S-1 Gard. It shows it installed on the bus. So we put it in the same place as it was seen in those materials.

Q. But the position of the body relative to the S-1 Gard, you were following Dr. Stalnaker's directions?

A. You know, in this case I think we just moved the body, you know, however many inches, 6 inches forward, so that it would be hitting the S-1 Gard instead of the tire.

So I don't know that we relied on his opinion to place it here other than just, you know, it's based clearly on the original -- this

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image here. We just moved the exact position of the body to impact the S-1 Gard instead of the tire.

Q. Okay. So to the extent that the position of the body on the left is the same as the position of the body on the right in terms of its configuration and where it is relative to the bus, that's the same opinion that Dr. Stalnaker reached?

A. Yep. That's correct.

Q. All you did was move it 6 inches forward in your computer-generated imagery?

A. Yes.

Q. So this is Dr. Stalnaker's opinion as to where the body was relative to the tire and as to where the body would be relative to the S-1 Gard and the tire, not yours?

A. I think that's correct. The only clarification is I don't know that he directed us specifically on where to put the S-1 Gard. But, definitely, the body position you see here on the right is coming directly from his instructions for how to place the body on the left here.

Q. Thank you, sir.

MR. TERRY: Your Honor, may we approach

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the bench and excuse the witness?

THE COURT: Would you just wait outside.

THE WITNESS: Yeah. Sure.

THE COURT: Thank you.

(Witness excused.)

MR. KEMP: Judge, with regards to these two pictures, I'd rather show them with him than Dr. Stalnaker, but it's not a hill to die for. But I do think I should be allowed to at least tell the jury how he assisted in Dr. Stalnaker's preparing the pictures.

THE COURT: And your offer of proof is that Dr. Stalnaker will be testifying as to the authentication.

MR. KEMP: Yeah, Dr. Stalnaker will testify.

MR. TERRY: I have no objection to the witness explaining how he worked with Dr. Stalnaker in oral terms or descriptive terms. I have no objection to him describing the direction he took with Dr. Stalnaker and the purpose of what he prepared.

But I do not think he should be allowed to display what is essentially Dr. Stalnaker's opinion. I think Dr. Stalnaker should qualify and

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give us the predicate of the picture.

MR. KEMP: Your Honor, it's not a hill to die for. I --

THE COURT: I'm going to sustain the objection. I think these two diagrams would be -- the foundation should be laid by Dr. Stalnaker. But I will allow, Mr. Kemp, for you to lay the foundation.

MR. KEMP: For Dr. Stalnaker tomorrow?

THE COURT: Sure.

MR. KEMP: Okay. Great.

THE COURT: Sustained.

MR. TERRY: So that's a description of what he did without showing the picture --

THE COURT: Correct. Yes. Is there anything else?

MR. TERRY: No, Your Honor.

THE COURT: We still have a couple minutes; right?

THE MARSHAL: Yes.

(Whereupon, a recess was taken.)

THE MARSHAL: Please remain seated. Come to order. Department 14 is back in session.

THE COURT: Go grab them.

THE MARSHAL: Go grab them?

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THE COURT: Yes. Thank you.
THE MARSHAL: All rise. All the jurors are present, Your Honor.
(The following proceedings were held in the presence of the jury.)
THE COURT: Very good. Thank you.
THE MARSHAL: Please be seated. Come to order.
THE COURT: Do you stipulate to the presence?
MR. KEMP: I do, Your Honor.
MR. TERRY: Yes, Your Honor.
MR. KEMP: Okay.

FURTHER DIRECT EXAMINATION OF JOSHUA COHEN

BY MR. KEMP:
Q. Mr. Cohen, we showed the jury a proximity sensor video depiction?
A. That's right. I'll bring it up.
Q. And have you made an exhibit that shows the same thing?
A. Yes.
Q. What number is it?
A. There's number 245 on this exhibit, 245.
Q. Okay. And we already showed the jury the driver view from position 174; right?

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A. Let's see. 174 aerial view. Driver view is here.

Q. And do we have an exhibit number for that?

A. 174, driver view, Exhibit 243, 243.

MR. KEMP: Your Honor, I would move to admit 245 and 243.

MR. TERRY: I have no objection to 245 as a demonstrative exhibit. I don't think it's been linked to the actual accident. I have no objection to 243.

THE COURT: Exhibits 243 and 245 are admitted.

(Whereupon, Exhibits 243 and 245 admitted into evidence.)

BY MR. KEMP:

Q. Okay. And do you recall you showed us what Mr. Plantz would see?

A. Yeah. So that was this position here with the bicycle in the right-hand lane. And Mr. Plantz from his seat would see this.

Q. Okay. Great. And so he just sees a shadow of the bike if he's looking over Mr. Pears; right? Sees a little bit of the bike looking over Mr. Pears?

A. Right. Mostly, he sees part of the rider and not much of the bike.
Q. Okay. Have you prepared an exhibit that replicates this particular model?
A. Yes. This is Exhibit 244.
MR. KEMP: Your Honor, I'd move to admit 244.
MR. TERRY: No objection, Your Honor.
THE COURT: Exhibit 244 is admitted.
(Whereupon, Exhibit 244 admitted into evidence.)
BY MR. KEMP:
Q. Let's try to get the exhibit numbers straight real quick.
So we started with 174. So why don't we use the actual exhibits if we can.
So the exhibit number for the 174, overview, was what?
A. 174, top view, is Exhibit 241.
Q. And the exhibit for what the driver could see from the 174 position?
A. That is -- 174, driver view, is 243.
Q. Okay. We also have Mr. Plantz's view from 174?
A. We have a different view for Mr. Plantz.

Q. That's the 175 view?
A. That's with the bike over here in the right lane.
Q. Okay. So Exhibit 174, overview, is what? And by "exhibit," that's the Red Rock image number; right? So image 175, overview, is what?
A. 175, top view, is Exhibit 239 -- 239.
Q. Okay. And 175, driver view, is what?
A. And that's 240.
Q. Okay. And Mr. Plantz's view at 175 is what?
A. Let's go back to Plantz's view. So that's this position, and his view from his seat is this here. This is Exhibit 244.
Q. Okay. So let's see if we can get this straight. So Red Rock Image 174, the overview, is Exhibit 241; is that correct?
A. Yes.
Q. Red Rock Image 174, the driver's view, is Exhibit 243; right?
A. Yes.
Q. Red Rock Image 175, the top overview, is 239?
A. Correct.
Q. And Red Rock 175 again, the driver's

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view, is 240?

A. Correct.

Q. And Red Rock 175, Mr. Plantz's view, is 244?

A. Mr. Plantz's view from the seat, we're looking at it here, is 244.

Q. So if we want to compare the driver's view in the two images, we compare 243 and 240; correct?

A. Um-hum. So the driver view, 175, is here, and then 174 is here.

Q. Okay. Now, did you also place the location of the various witnesses on your model?

A. Yes.

Q. Can you show that to me, please.

A. I'm going to go back up to a view we looked at before, which is from the area just above the camera mounted on the Red Rock Casino.

Q. So this is Image 175?

A. This is -- right now, the bus is in position 175.

Q. Okay. And, again, 175 is actually where it is in the Red Rock video?

A. At frame 175, this is where the bus was.

Q. All right. Now, show me where

Mrs. Kolch was, for example.

A. She was on this motorcycle right here.

Q. And you've placed her using the Red Rock video too?

A. They do appear in the Red Rock video, yes.

Q. Okay. And can you show the jury her angle of this particular incident?

A. Sure. So we'll put the camera at her eye position.

Q. So can you zoom in a little bit, please.

A. Yeah.

Q. So based on the model, that's what Ms. Kolch is able to see; correct?

A. If the bus and the bike are in those positions, she would see it clearly.

Q. Okay. And I think we already did Pears.

And, just for the record, so she can see all of the bicyclist, but not the rear tire of the bicycle according to your model?

A. According to this position, yeah.

Q. Okay. Now, how about the gardener, Mr. Sacarias? What can he see from his position?

A. So the gardener was over in this area near the fire hydrant. And from his position,

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he's going to see something like this.

Q. Okay. All right. And have you done -- or can you do the same thing for Mrs. Bradley? I don't know if I want to take the time, but you can do the same thing with Mrs. Bradley?

A. Yeah. Sure. So Mrs. Bradley is in a vehicle following the bus.

Q. All right. She said, if I remember right, that she was 100 to 150 feet. So why don't you just put her 125 feet in the same lane as the bus?

A. Okay. That's what we did.

Q. Okay.

A. And then you want to see her point of view?

Q. Yeah, let's see her point of view.

A. I'm going to save time by just putting the camera at the windshield here, which is essentially the same as if I were to put it inside the car. And then she sees the bus and most of the bike.

Q. And she also sees the entire bike lane line going down; right?

A. That's right.

Q. Okay. So she can see the back of the

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bike but not the front of the bus or the front of the bike?

A. That's correct.

Q. Okay. Great.

MR. KEMP: Your Honor -- can I have one second, Your Honor? It's Monday.

THE COURT: Sure.

MR. KEMP: Oh, yes.

BY MR. KEMP:

Q. Do you know who Dr. Stalnaker is?

A. I do.

Q. And can you tell the jury who he is?

A. Dr. Stalnaker is a biomechanical expert that is part of the team consulting on this case.

Q. And have you done any work with Dr. Stalnaker on this case?

A. Yes.

Q. And what have you done?

A. Dr. Stalnaker got on what I call a screen share conference call. So he's not in the same physical location, but he's on his computer looking at exactly what we're doing on the screen, much as we are right now.

And while they're doing that on the conference call, he directed me to move the body

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of Dr. Khiabani into a position that matched up with his opinion in the case as to how the impact with the rear tire was likely to have occurred.

Q. So you took direction from Dr. Stalnaker as to how Dr. Khiabani's body should be positioned?

A. That's correct. And, additionally, there was a picture of the helmet provided that showed that there was some crushing damage on the helmet. And to make the process of collaborating with him a little easier, we mapped the area of crush and we indicated where the helmet was crushed using a red color so that we could be sure that he understood, as we were moving the body around, how the helmet should be oriented to match up with his opinions in the case.

Q. Okay. You had the actual helmet?

A. I saw pictures of the helmet and the crush damage.

Q. So you used the actual helmet pictures to indicate the crush area?

A. That's correct.

Q. And then Dr. Stalnaker had you put Dr. Khiabani on his back?

A. Yeah.

Q. And Dr. Stalnaker is the one that directed the angle of the body?
A. That's correct.
Q. And then you prepared a visual of that?
A. That's correct.
Q. Using your model?
A. That's correct.
Q. And so it's Dr. Stalnaker's opinion but it's your model?
A. Right. We prepared an exhibit at the direction of him.
MR. KEMP: Your Honor, I just want to make sure there's no foundation objection. Do we need more foundation?
MR. TERRY: Your Honor, we agree that if Dr. Stalnaker will validate the picture, the illustration that Mr. Cohen prepared, that there is sufficient foundation.
THE COURT: Thank you.
MR. KEMP: Thank you. No further questions.
Oh, forgot, Your Honor. Oh, man. Okay.
BY MR. KEMP:
Q. Actually, you prepared two pictures with Dr. Stalnaker; correct?

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A. That's correct.
Q. Okay. And one picture depicts just generally what?
A. One picture depicts the location of Dr. Khiabani's body as it impacts the rear tire, according to Dr. Stalnaker's findings. And then the second picture depicts how the body might have been positioned had there been an S-1 Gard installed on the bus.
Q. And we have copies of those, but we're not moving to admit them now?
A. That's correct.
MR. KEMP: Okay. Thank you.
MR. TERRY: May it please the Court.
THE COURT: Certainly.

CROSS-EXAMINATION OF JOSHUA COHEN

BY MR. TERRY:
Q. Mr. Cohen, could you put up the one with the cone for Dr. Khiabani in accordance with Mr. Plantz' testimony?
A. That's the red cone-shaped thing?
Q. The red cone.
A. Yeah. This one here; correct?
Q. Yes, sir.
A. Okay.

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Q. And can you back it up a little bit so we can see the complete second bus?

A. Yep.

Q. Okay. Now, it is my understanding, based on what you have done with the Red Rock video, is the position of the lead bus is fixed?

A. The position of this bus here?

Q. Yeah. The one -- there are two buses shown, one following another.

A. Yes.

Q. The picture of the lead bus is fixed.

A. The picture of the lead bus is indicated by the visibility in the Red Rock video. So we are confident that at frame 187, that's where the bus is.

Q. And then the bus behind, you're confident that that's where the bus was based on the Red Rock video at frame --

A. This is 175 here.

Q. So the two buses you know, based on your science, your skill, and the work that you have done, that's where the buses were on the day that the event occurred?

A. To the best that we can determine with the information available, yes.

Q. You have a bike up there at the lead bus by the right wheel well?
A. That's this one highlighted in blue; right?
Q. Yes.
A. Okay.
Q. And that's fixed by frame 187 and your examination of what appears to be a dark smudge being consistent with that's where the bike hit the bus?
A. That's the best that we can determine, yes.
Q. Okay. Now, you know, because of the measurements that you made, how fast the bus was traveling between the following bus and the lead bus?
A. Right. From this position to this position, it's 24, 25 miles per hour average.
Q. Which means that 1.2 seconds elapsed between the two images?
A. The 1.2 seconds is calculated by knowing that we're looking at frame 175 and 187. So that's correct in this case, that these two buses are separated by 1.2 seconds in time.
Q. And that is a fixed fact. It's not an

opinion; it's fixed.
A. It's the best that we can determine from the science, that's correct.
Q. Now, you put Dr. Khiabani at a location where you interpreted he would have been in accordance with witness Plantz' placement of him?
A. Right. We looked at this exhibit here, and we tried to match up the position of the bicycle and the bus as best we could with that exhibit. So that's this positioning here.
Q. Now, how did you determine the dimension of the cone?
A. So the cone is based on, essentially, traveling half the distance as the bus. So the bus travels 42 feet, for sake of argument; the cone is 21 feet in radius.
Q. So how did you determine the speed that the bike was traveling as you did the bus?
A. I don't know the speed, so this is a hypothetical since this falls into the realm of what if the bike was traveling at the speed of half the bus.
Q. So did you calculate the speed that the bike was traveling?
A. No. I mean, I could, but it was just

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essentially we made the bus go half the distance -- the bike went half the distance of the bus for that cone.

Q. Where did you get the speed?

A. Well, if we assume that the speed is half of the bus, then it makes sense that the bike would go half the distance.

Q. Oh, no. But why did you assume that the speed of the bike was one half the speed of the bus?

A. Oh. That was just a hypothetical possibility we talked about with counsel. So they wanted -- that was the decision, and so let's look at that possibility.

Q. So that Mr. Kemp's side gave you that speed?

A. I understand that other people have mentioned about half the speed. But, again, I haven't read all the trial testimony, so I don't know for sure if that's the case.

Q. Okay. So the speed that you assigned to the bike has not been fixed by your work?

A. No. We could make it any speed we wanted.

Q. If you leave it at this speed, can you

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move the bike over to the bus?

A. Move the bike over to the bus?

Q. Yes.

A. Sure. And you want me to move the cone with it?

Q. And taking the cone with it.

A. Okay. I think about roughly there was where we had it, to be consistent.

Q. Is that the same position you had it based on what Ms. Bradley testified to as you interpreted it?

A. Approximately, yes.

Q. Can you back up a little bit?

A. Okay.

Q. So based on the speed that you have assigned to it, the position Ms. Bradley assigned to it, and the cone that you created, Dr. Khiabani could not have gotten to the position where he impacted the bus?

A. Right. It's closer, but it's still not all the way.

Q. All right. Now, I want you to move the bike with the cone forward. Okay?

A. Sure.

Q. Until it's within the cone.

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A. So like let's say about there.

Q. All right. So if I understand correctly, then, based on the position that you can assign to the following bus, the lead bus, the point of impact, assigning a speed half to the bike, that's where the bike would have to be 1.2 seconds before impact?

A. If you believe that the bike was traveling half the speed and didn't have any other things going on with it, then this would be the case, yeah.

Q. Well, up until now, have you ever doubted the speed that you were asked to assume, 12 miles an hour?

A. I try not to, you know, make any judgments on it because I just don't know. I mean, I certainly have seen bikes go 20 miles an hour and I've seen them go 7 or 8. So I don't know the answer.

Q. For the purposes of this demonstration, can we assume that the speed is 12 miles an hour?

A. Sure. That's fine. Yeah.

Q. All right. Now, putting the bike there, can you take out the lead bike -- the lead bus?

A. The lead bus. That's this one here?

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Q. Yeah. Take it out.
A. Okay. So I'm going to turn off -- that's going to make the bike go away too. Is that okay?
Q. Yes.
A. Okay.
Q. And can you take away the cone?
A. Yep. If I can remember where I put it. Let's see. Right here.
Q. Now, assuming that 1.2 seconds before we get to frame 187, that's where the bike was located?
A. Okay. I can make that assumption.
Q. Can you show us what the bus driver would have seen?
A. Sure.
Q. Okay. The complete bike through the windshield wipers?
A. The windshield wipers and then the center column and the windshield obscure the bike somewhat, yeah.
Q. Can you show us what Mr. Pears would have seen.
A. Mr. Pears, sitting in the right seat here?

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Q. Yes.
A. Sorry about that. Go to the previous view. Try it again.
So in that case, he would have his view obscured by the A-pillar.
Q. So he wouldn't have seen the bike at all?
A. Under this set of assumptions, he doesn't see the bike at all.
Q. How about Mr. Plantz?
A. He's got a view partially obscured by the dash and the windshield wipers.
Q. But for the most part, almost all the bike?
A. You guys can be the judge of that.
Q. But he would have seen or could have seen what you have depicted here?
A. He could have seen something under this set of assumptions, yes.
Q. Well, the only assumption is the speed of the bike; right?
A. The assumption would be that position of the bike, yes.
Q. Based on where you positioned the bike at frame 187?

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A. Based on from 187, if you want to work backwards, assuming a speed that's half the bus, it would be somewhere in this vicinity, although it's hard to know exactly where because we don't have a way to track how the bike was moving.

Q. Okay. Now, in terms of tracking how the bike was moving, you only have the four frames that show the bike; correct?

A. That's true.

Q. 184, 5, 6, and 7?

A. Correct.

Q. I want you to go back to 174, top.

A. Hold on a second. Let me capture this scene here in case we need it for later.

And you want me to go to 174, top; right?

Q. Top. Yes, sir.

A. That's this one here?

Q. Yes, sir. What is the lateral distance between the bus and the bike?

A. The lateral distance between the bus and the bike, they are not exactly right next to each other, but I'll use the same method of measuring as before, which is from handlebar to the side of the bus.

Q. Where are you putting it on the side of the bus? Is it right at the edge or are you putting it below the light?

A. I'll draw a line so it's a little clearer. I'm drawing a line here, and then we'll draw a line to there.

Does it make it clearer?

Q. It does. What is the lateral distance?

A. That is about 2.3 feet. So roughly 2-foot-3, 2-foot-4.

Q. How about 175, the next one?

A. Okay. So 175, the top view, which is here.

Q. And the lateral distance?

A. About 2 1/2 feet, so 2-foot-6.

Q. So at 174, it was?

A. About 2-foot-3 or -4.

Q. And then at 175, it was?

A. About 2-foot-6.

Q. Which means that the bus has moved -- you didn't move the bike, did you, when you created these?

A. I mean, the bike is assumed to be going straight between these two views. The bus is what's causing the change in the dimension. The

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bus is starting to angle away from the bicycle at that point.

Q. So at frame -- between 174 and 175, the bus is starting to angle away?

A. That's right.

Q. Turn to the left?

A. I don't know if it was a turn or not, but it was definitely moving further away.

Q. Okay. Now, you, sir, with the education that you've had and the experience, you are not expressing any opinions about the aerodynamics of the bus, are you?

A. That's correct. No opinion about the aerodynamics.

Q. No opinion about proximity sensors use or nonuse?

A. No opinion on that.

Q. No opinion about biomechanics?

A. That's correct.

Q. And no opinion about accident reconstruction?

A. So we're not certified accident reconstruction. We work with them to help illustrate the situation. But, no, I'm not giving an opinion as an accident reconstructionist.

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Q. And no opinion about human factors?
A. That's correct.
Q. So there are other experts that have done those things, but you personally have done this photogrammetry and 3-D analysis?
A. That's right, 3-D visualization and photogrammetry.
Q. And you are relatively confident that you have exercised your skill and ability with the information made available to show us, as best you can, what actually occurred on April 18th, 2017, in this accident?
A. I think the answer to that question gets back to what I said earlier, is that we know where the bus was as it moves through the intersection, and some of the other things that you're going to see are based on either witness testimony or hypotheticals.

And so those I wouldn't say we know for sure what actually occurred, but we know everything that we are -- using the 3-D visualization to illustrate is based around the accuracy of this base model, which includes an accurate model of the intersection and an accurate placement of the bus as it travels through the

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intersection.

Q. So the bus path is accurate --

A. Yes.

Q. -- based on your work?

A. Correct.

Q. And the other things that you have talked about are based on conclusions, opinions, suggestions of others as to what happened and where things should be placed?

A. So I think the thing to remember is the computer model is very accurate in terms of when you put a camera somewhere, it's going to give you what you would see as if you were sitting in that place taking a picture.

But if you want to tell me, well, I want to see the bus or the bike in such-and-so position, we don't have the foundation to know for sure that the bike was in that position, then it's only as good as that information.

So you've got to think, what's the foundation? Is it based on actual science for the bus position, witness testimony for the bus versus bike position, or is it just a hypothetical situation that we want to understand better?

Q. All right. Did you prepare an exhibit,

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which is a planned view showing the outline of the bus positions in your 3-D model?

A. I did.

Q. Before you display it, sir, I'm going to show you what has been marked as 511-001.

Is that it?

A. Yes, it is. And I think the one I had on my computer has the bike positions in it. Would you rather see it without the bike?

Q. Without the bike positions.

A. I can call up the exhibit from the report, if you like.

Q. Yes, sir, please. So you can call up and we can deal with Exhibit 511-001 without the bike in it; correct?

A. Is this what you're looking for, on screen here?

Q. Well, yes, sir, but before we display it, I have to have it admitted into evidence.

A. Sorry.

Q. If you can take it down.

A. Yeah.

Q. You're looking at it; right?

A. Yes.

Q. Is this it?

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A. That's it.

MR. TERRY: Your Honor, we'd offer Exhibit 511-001.

THE COURT: Okay. Is that next in order?

It's admitted.

(Exhibit No. 511 was admitted into evidence.

MR. KEMP: Can I get a number?

THE CLERK: It's 511, next in order.

BY MR. TERRY:

Q. So what we're looking at now is your work fixing the position of the bus based on your analysis of the Red Rock video and your photogrammetry --

A. Photogrammetry.

Q. -- of the actual intersection itself?

A. Yes.

Q. So as near as what you can tell, what you have displayed here is exactly what occurred?

A. For the bus positions, yes.

Q. Just the bus position?

A. Yes.

Q. Exactly what occurred?

A. Yes.

Q. And this is not hypothetical. This is not an abstraction. This is not an opinion, if you will. This is based on your work analyzing the factual information available?

A. That's correct.

Q. And did you find your measurements of the scene accurate, correct, true?

A. Yes.

Q. And did you find the Red Rock video as you analyzed it accurate, correct, and true?

A. Yes.

Q. In this -- when you place these images of the bus, is the orientation of the bus against the background intentional?

A. Are you asking why we're looking at a straight-down view?

Q. No. I'm asking why it looks like it's moving to the right.

A. Oh, that's just where the -- that's the bus positions. So it moved to the -- I mean, from the driver's perspective, it would be moving to the left, and from looking at the top-down view, it seems to be moving to the right or to the east in this case.

Q. Okay. So when we're looking at what you

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have prepared here, it looks as if the bus is moving to the right?

A. Right.

Q. But if we were on the ground behind the bus, would it appear that the bus moved to the left?

A. It would.

Q. So the change in direction and placement of the bus is something that is fixed based on your photogrammic is there another word for that, sir?

A. You can say based on photogrammetry or based on my investigation. That would be fine.

Q. Based on your -- I have trouble with photogrammetry. Based on your investigation, that depiction of the bus moving to the left is true, correct, and accurate?

A. Yes.

Q. Now, you are aware, then, that the bus did not move straight or turn to the right?

A. I'm aware that the bus did not -- you're saying if it had turned to the right, we would have a different path on the screen here?

Q. Yes.

A. That's true.

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Q. All right. Now, you had an image that you showed of witness Sacarias, who was standing on the side?
A. Yes.
Q. Could you call that up, sir?
A. Sure.
Q. And could you show us essentially his view?
A. Yes.
Q. All right. Now back up so we can see the image of Sacarias.
A. So we're backing out his view, like looking over his shoulder?
Q. Exactly.
A. Okay.
Q. Okay. So if we were there and standing behind Mr. Sacarias, that's what we would see?
A. If the bus -- if the bike was in that position, yes, you'd see that.
Q. All right. And the bus would then move from his left to his right?
A. The bus would be moving --
Q. From Mr. Sacarias' left to his right?
A. Depends on exactly how he was standing. But in our view right here, it would be moving

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towards this side where my cursor is.

Q. And as it's moving, it is moving to the left?

A. As the bus is moving in this direction, it is, I would say, moving toward the east. So it's getting out of its travel lane and moving toward the east, yeah, which would be a leftward movement for the driver.

Q. Okay. And leftward movement as far as Mr. Sacarias' position is?

A. You know, again, depending on how he's facing, it could be confusing; but yes.

Q. So what if we turn and rotate him 90 degrees so he's looking right at him? Can you do that?

A. Yeah. So rotate him 90 degrees; right?

Q. Yes, so he's looking right at the side of the bus.

A. So now he's kind of looking right at the side of the bus.

Q. Okay. So the bus, as far as what you believe occurred, what your investigation has revealed occurred, would be moving to his left away from him as it passes in front of him?

A. Well, if he's facing the bus this way, it would be moving farther away from him, yes.

Q. So if Mr. Sacarias saw the accident and perceived the accident and reported that the bus actually moved toward him, to the right into the bike path, he would be incorrect in his perception?

A. I suppose so. I mean, I would say that, from this perspective, it's much easier to perceive what's happening from left to right than it is, you know, forward and backward.

Q. I'm not asking you to evaluate what his perception was or what was available to him or how he reached his conclusion, but if his conclusion based on his perception is it moved from his left to his right was -- the bus was coming toward him, that's not consistent with your investigation?

A. Yeah, I guess not. But I would say it's a little confusing as far as all the directions. So I might give him a pass on that one.

Q. What's confusing about the directions?

A. Lefts and rights and forwards and backs and, you know, relative understanding of those things.

Q. Okay. Well, the question is whether or not the bike crossed into the bike path or went away from the bike path.

If Mr. Sacarias thought what he saw was the bus went into the bike path, that would not be correct based on your investigation?

A. That's correct. What you're saying is that the bus is starting to move here. If you look straight down, the bus is starting to move out of this lane as opposed to moving into the bike lane. That's a true statement, what he said.

Q. And if he reported, based on what he saw or what he perceived, that the bus actually entered the bike lane, that would be incorrect?

A. Did you mean to say the bus entered the bike lane?

Q. Yeah, the bus entered the bike lane.

A. That would be incorrect.

Q. Okay. Now, going to the exhibit that I asked you to pull up first, 12C here.

A. Okay. This one here?

Q. Yes, sir.

A. Okay.

Q. Now, is there a table that you've prepared that identifies these bus positions with the frame pattern?

A. There is.

Q. Can you put them both up at the same time?
A. I can, I think. I may have to open the actual report itself, but that's okay. I can do that. Okay.
Q. All right. Now, that table that you put up there identifies the frames that are depicted on the diagram that you prepared; correct?
A. That's right.
Q. So you start with frame 180. And if you go back to the picture itself up at the top, that's the first bus position; right?
A. This right here.
Q. Oh, can you set them side by side?
A. I can, but, you know, they'll get small, if that's okay.
Q. Well, for these purposes, when you look at 180, that's the first bus --
A. So that would be this one here.
Q. Is 181 displayed?
A. No.
Q. You go to 182?
A. Right. The ones that are in yellow are the ones that we initially put into the model for this analysis.

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Q. All right. Now go back up just to the picture itself. So the first bus that we see is at frame 180?
A. That's here.
Q. And based on the look-see that we did at frames 174 and 175, the bus is already moving to the left at frames 174 and 175?
A. I think so.
Q. Can you add those to this diagram?
A. If we go into the model, I can do it.
Q. Please, sir, if you would.
A. So we're going to go to the top view. Because here you see the buses -- the one that's here is 174. So they're already added into this one. And here is 17 -- the 174 is here. And the last one we have is 202 here.
Q. So going back to 174, 175, is there already left movement; that is, the bus is moving to its left between those two frames?
A. I've got it angled to the left. And, you know, one thing that I will say is that these last ones, one reason we didn't put it into the report -- here you see we started the report at 180.
Q. I did.

A. And then here we're using 174, 176, 175. We can see only the front of the bus in those images from the Red Rock video. So it's harder to tell exactly what the back of the bus is doing.

We can be confident in the position of the front of the bus, but because we don't know what the back of the bus is doing because we can't see it, I don't know exactly what angle it's at. Is he starting a turning motion? Is he continuing a motion that's already angled coming from somewhere else? I just don't know.

Q. But between frames 174 and 175, we do know that the bus moved at least 3 inches to the left?

A. Relative to the bike lane stripe, it moved at least 3 inches to the left.

Q. And that's the front of the bus?

A. The front of the bus, that's right.

Q. Do you conclude that that's when he began the left turn that is depicted in the whole exhibit?

A. I can't conclude about whether he's turning or not. I can conclude that the bus moved that much, but whether it was due to him turning at some point or if he was already sort of headed

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that direction, I'm just not sure.
Q. Okay. But the movement to the left is a continuous movement from this point forward?
A. Yeah. You see that it's moving -- the bus is moving further and further to the left.
Q. Now, you had told the jury earlier that you had some frames that showed Dr. Khiabani on the bike from the Red Rock video?
A. That's correct.
Q. Frames 184, 185, 186, 187?
A. That's right.
Q. All right. Okay. I'm going to show you what has been marked by the court reporter as 511-002 up through 5. Are these the frames from the Red Rock video that showed Dr. Khiabani in your opinion?
A. Yes, they are, although not really well-printed. Did you want me to bring them up on screen?
Q. Well, we have to go through the process first.
A. Okay.
Q. I'm going to show you Exhibit 511-006, which are enlargements of the same four.
A. Yes, that's them.

Q. Okay. And those are the shots from the Red Rock video that you believe show Dr. Khiabani as a smudge against the bus?

A. That's right.

MR. TERRY: Your Honor, we would offer Exhibits 511-002 through --

MR. KEMP: Your Honor, I have no objection, but I thought we admitted these already. So if we already have them.

THE COURT: No, we admitted 511-001.

THE CLERK: So these would be A, B, and C of 511.

MR. TERRY: It's 511-002, 3, 4, 5, 6, 7.

THE CLERK: Is that the whole exhibit of 511? Is that all of 511?

MR. TERRY: No, there will be additional 511, but different -- additional numbers. I'm not trying to duplicate.

THE COURT: No, no. I understand.

THE CLERK: We just need to get it right.

MR. TERRY: I agree that if the documents have already been admitted, these can be withdrawn.

THE COURT: It's my understanding that

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that was just one document.

THE CLERK: It's going to be 511-2, 511-3, 511-4, 511-5, 511-6, 511-7, 511-8, and 511-9. These are selections from 511, not everything, but part of it.

MR. TERRY: Yes, ma'am.

MR. KEMP: This is 2 through what?

THE CLERK: 2 through 9.

MR. KEMP: No objection, Your Honor.

THE COURT: So Exhibits 511-002, -3, -4, -5, -6, -7, -8, and -9 are admitted.

(Exhibits 511-002 - 511-009 were admitted into evidence.)

BY MR. TERRY:

Q. All right, sir. I'm going to ask you to take a look at these again, verify that those are the screenshots from the Red Rock video that, based on your analysis, show Dr. Khiabani in relation to the bus.

A. That's correct.

Q. All right. Can you show us frame 184.

A. 13B.

Q. Okay. Now, looking at that, we can see a yellow circle; right?

A. I see the yellow circle.

Q. That's added; right?
A. The yellow circle was added to the footage for indicating where the finding was.
Q. So our attention is drawn to that image, if you will?
A. That's right.
Q. Can you blow that up?
A. Now we're looking at something that's similar to this enlarged version, which would probably be 511-6 or something like that.
Q. Can you make it any larger using your program?
A. I can make it appear bigger, but I can't get any more clarity in the image.
Q. So that's as clear as the image gets?
A. Right. We only have the pixels that came with the camera to work with.
Q. Okay. But your conclusion is that shows Dr. Khiabani on his bike next to the bus?
A. That dark area is, in our conclusion, where Dr. Khiabani approximately was. We just don't know how far away from the bus at that time.
Q. So in terms of the lateral separation between Dr. Khiabani and the bus at that point, you can't fix it?

A. That's correct.
Q. Can you go to 185.
A. Yes.
Continue to zoom in; right?
Q. Yes.
A. Okay.
Q. Until the point where it's no longer -- makes any sense. I would like the jury to see as much detail as you can produce from the image.
A. Yeah, this is as detailed as we're going to get.
Q. That's it?
A. Yep.
Q. Still the same problem, you can't tell how far from the bus the smudge is?
A. Correct.
Q. All right. 186. Enlarge to as much detail is you can.
A. Um-hum.
Q. That's it?
A. Yes.
Q. Okay. Then 187.
I have to confess, Mr. Cohen, I don't see the doctor at all.
A. You know, I will tell you that it

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didn't -- it's not something that popped out to me at first either. And the reason that we were able to locate the doctor in these series of images is because that smudge on the side of the bus, that mark from the handlebar hood hitting the bus, gave us a clue about where that initial impact may have occurred.

So I started looking at all the bus frames in that area. And I noticed that there is this dark profile that did not move in a way that would be consistent with any other explanation. There's no dark painting on the side of the bus. It didn't move at the same speed as these palm leaves were moving. And so the only other explanation to have this dark profile moving here was that it was Dr. Khiabani.

Q. Would you be so kind to take my pointer, go to that image up there, and show the ladies and gentlemen of the jury what it is that you believe -- or that you have concluded is of Dr. Khiabani?

A. Yeah.

Right here in the center of the circle, mostly obscured by the palm leaf. And so if you only showed me this image and I knew nothing else about the case, it would be very difficult to say that's definitely it. But because we have a series of images and because that dark profile is moving at a speed that's inconsistent with anything else, there's no other explanation.

Q. In terms of 187, is there any detail about Dr. Khiabani that you can extract from the picture?

A. What do you mean by detail?

Q. Well, I mean, can you tell if he's got both hands on the handlebar? Can you tell if he's crouched? Can you tell if he's sitting up? Can you tell how far he is from the bus?

A. No to all of those things except on the last question. You mentioned how far is he from the bus. This frame is consistent with the -- I guess I'll just say if I put the bike next to the bus, leaning against it, falling against the bus in a position that was taken at the bus inspection, so we put the bike in that position, it matches up with the shadow in the same place.

So when dragging back and forth between, like we did before, you can see how the bicycle position matches up with the position of this profile here, which is, at this point, mostly

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hidden behind the palm leaf, but earlier you saw it move across the open part.

Q. All right. Now, if you -- when you dealt with this, did you use your magic, for lack of a better term?

A. Magic? I'd love to have magic.

Q. But you could make the pictures do things. You could look around and you could take things out, put things in?

A. Oh, you're talking about in the 3-D model, looking at things from different perspectives?

Q. Right. That's the only magic I'm talking about.

A. Okay.

Q. So when you did your magic, you could take away things to provide us a picture of what was there without the fronds, if you will?

A. If you wanted me to make the tree go away in the model, I could do that, although I can't make it go away in the photograph.

Q. But you can in the model?

A. In the model, yes.

Q. And then you can add things to the model once you've done that, like an image of the bike?

A. We could add a model of the bike into the 3-D model, yes.

Q. And did you do that with respect to frame 187?

A. We did.

Q. I'm going to show you what has been marked as 511-010, 11, and 12, and ask you if that's a representation of what you did.

A. So these three images are part of our report, that's correct.

Q. Okay. And that's where you took away the palm fronds, added the bike?

A. Right. We have a bike next to the bus, and then we're showing an image in the last one you handed me that's a little bit closer to the bus. So we're not seeing the palm fronds anymore because we're at a slightly different camera position.

Q. And that's part of the work that you did?

A. Yes.

Q. But it was not manipulation of known data; it was adding data based on certain assumptions, if you will?

A. Right. We made an assumption that the

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bicycle hit the bus at some point because it was supported by evidence. And then we tried to figure out what position -- you know, our selection of frames -- is that the most consistent with. And it was 187, which is the answer.

Q. Very good.

MR. TERRY: So I want to offer into evidence, Your Honor, if I may, Exhibits 511-10, 11, and 12.

MR. KEMP: No objection, Your Honor.

THE COURT: Exhibits 511-10, 11, and 12 are admitted.

(Whereupon, Exhibits 511-10 - 511-12 were admitted into evidence.)

BY MR. TERRY:

Q. Now, can you put those up for the jury.

A. Yes. So this is the superimposition of two images. The dotted lines are part of the geometry of the bus, but you mostly see the image from the Red Rock video here in the first.

And then --

Q. Go back. Slow down.

That is what actually shows up on the Red Rock video?

A. We're seeing mostly the Red Rock video

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with a little bit of the model peeking through.
Q. What's peeking through from --
A. Like these dotted lines you see on the top of the bus, those are part of the three-dimensional geometry of the bus that's in that 3-D model.
And so these are the things that we're using -- you know, the dotted lines in the trees, those are what we're using for reference to make sure we have an accurate match between the Red Rock video and the 3-D model so that, when we put the bus into position, we know that it's an accurate photogrammetry.
Q. Okay. So those are reference points, if you will?
A. The stuff on the trees and the poles are reference points. Once we have it matched, then we put the bus into position and make sure that it's matching up with where we have the bus in the footage. And, you know, we use these dotted lines to make sure we've got the lines and the bus accurately matched up with the lines that you see in the camera footage.
Q. Okay. So then you begin to take things out of the actual picture and rely more on the

model?

A. Well, then once we have the bus in the model, we can look primarily at what it looks like in the model. Here, you're seeing less of the picture, only about, you know, 20 percent of the picture, and mostly the 3-D model.

Q. Is the doctor in that picture?

A. Yeah, he's right here.

Q. Have you got a closeup?

A. I mean, I can zoom in.

Q. Well, I mean, the next one, is that a closeup?

A. The next one is a little closer. And I have one that's even closer as well if you'd like to see it.

Q. Okay. What we're looking at right now is your model extracted -- based on or imposed on the Red Rock video that shows the bus at 187 and your conclusion about the position of the doctor?

A. That's right.

Q. Okay. Now, did you have one where you actually showed the doctor up against the bike?

A. Up against the bus?

Q. Bus. I'm sorry.

A. I do.

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Q. Okay. 511-13?

A. Yep, I've got that one.

Q. Now, is that your depiction of the doctor and his bike coming into contact with the bus?

A. Yes.

MR. TERRY: Your Honor, I would offer 511-013.

MR. KEMP: No objection, Your Honor.

THE COURT: Exhibit 511-013 is admitted.

(Exhibit 511-13 was admitted into evidence.)

BY MR. TERRY:

Q. Could you put that up for us, sir.

Okay. Now, in this diagram, this picture here, is this an extraction from the ones we had looked at before?

A. The way I would describe it is that, you know, we have these things that are now placed in the 3-D model. We can look at them from any perspective. So here I've just moved the camera in closer so we can see some of the details.

Unlike the camera footage, which we're limited by how many pixels are in the actual video, here, because we have a 3-D model, we can

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look at it from any perspective we want. And if we wanted to see more detail, we'd zoom in close.

Q. Now, I notice that you've got the left handlebar up against the bus?

A. That's right. I almost was going to move it to see it better, but I can't do that in this picture. I'd have to switch over to the 3-D model.

Q. Please switch over.

A. Okay.

It's not that one. Hold on.

Initial. Here we go. Okay.

Q. All right. Now, you attended at least one examination of the bus?

A. I did.

Q. And did you notice the smudge mark behind the right front tire?

A. I did.

Q. Is the handlebar positioned up in the smudge mark?

A. So I'll briefly turn off the -- I can't turn it off separately, but hide this temporarily. There's the smudge mark in that area, and that's the handlebar next to the smudge mark.

Q. Now, you are aware that others have

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concluded that that is the point of contact between the bus and the bike?
A. My understanding is that there's some consensus that the initial point of contact was here.
Q. And you aren't able, based on your analysis of the Red Rock footage and your conclusion that the smudge mark you showed us at frame 187, is consistent with that?
A. I think what you're saying is that my conclusion that frame 187 of the red Rock footage is most consistent with where the bike is when it's contacting the bus at this point. Yes.
Q. All right. Now, let's go back to your diagram of the bus positions between 174, 5, and 202.
A. Okay.
Q. Can you tell us where the bus at position 187 is on this diagram?
A. Yes. I think what I should do is just -- 187 is that one right there. So it would be that one right there.
Q. Okay. I'm going to ask you, if you would, sir, to show the jury where you think that is on the picture there.

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A. Okay. You can see the bus outline is highlighted in blue here. There's a lot of buses turned on right now, so it's a little hard to tell, but this is the extent of the bus in the blue rectangle.

Q. Can you set it up so the only blue rectangle is 187?

A. I can show only 187 bus and the rest of them, I can hide.

Q. If you would.

A. Okay. Okay.

Q. That only shows frame 187?

A. Yeah. Let me also -- this hasn't come into play yet, so let's get rid of this here. Okay.

Q. Okay. Now, if you would put back the entire set of buses, leaving in the -- you added the doctor, right, at the right front of the bus?

A. Yeah. Now I've got to give you all of them again.

Q. Now, I want to understand, sir -- and hear me just so that we're clear -- if someone came up and told you that I was there and I witnessed the occurrence and, instead of the contact being by the right front tire, it was all

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the way toward the back of the bus, would you say that their perception of what happened was not accurate?

A. I think what you're referring to is the initial contact where I have it mapped onto the bus with the smudge mark.

Q. Right.

A. I would say we have evidence that indicates, strong evidence, that indicates that the initial contact happened near that right front tire.

Q. And if someone came in and said, "I was there. I was on the ground. I watched it happen. It happened closer to the rear tires, the rear section of the bus," would you conclude that his perception, based on where he was, what he was doing, that sort of thing, was inaccurate?

A. Could be that, sure.

Q. In terms of what we have up here, including the point where you have placed the doctor at 187, this depiction is not an abstraction, is it?

A. The depiction for the bus path is not an abstraction. The depiction of this position for the doctor contacting the bus is an assumption based on good evidence, but, again, I can't map the exact position of the bike using photogrammetry. We're just actually making the best assumption that we can based on the evidence that we have. So that's pretty good.

Then this final position was surveyed by the police and is also visible in the footage. So those things are not assumptions.

Q. Okay. So the things that are not assumptions are the bus path and the final resting place for Dr. Khiabani?

A. Or I should say not hypothetical. They're based on evidence.

Q. So those things are not abstractions. They're based on the video footage, measurements made by the police, and your analysis of that evidence?

A. Yes.

Q. And so if all of us had been in a hot air balloon, in the basket of a hot air balloon, floating over this intersection when the accident occurred, we would have seen that bus path and we would have seen Dr. Khiabani where he's indicated?

A. Very likely, yes.

Q. Now, in terms of positioning him at 187 as the point of contact, that is a conclusion that you made based on your analysis of the smudges on the bus?

A. Based on the smudge where the handlebar rubbed up against the bus.

Q. I was actually talking about 184, 5, 6, and 7.

A. Okay. So then let's not call that a smudge. Let's call it a dark profile.

Q. I apologize. I did not mean anything by the use of the term except that it is not a clear picture of the doctor; it is a profile that you have interpreted is the doctor?

A. Right.

Q. If that interpretation is correct, 187 is where the doctor contacted the bus?

A. That's the best we can determine from the information we have.

Q. Okay. Now, in terms of the line of the buses that we have up there now, is the top bus 174 on this?

A. This here?

Q. Yes.

A. That's 174.

Q. All right. So how much time passes

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between when the doctor hits the bus and 174?

A. So the doctor hits the bus at 187, and then frame 174 is 13 frames earlier. So that's 1.3 seconds.

Q. Okay. And if the bus is traveling at 25 miles per hour, you can calculate how far back that is?

A. I could, yes.

Q. How far back is that?

A. Can you give me a moment to do the math?

Q. Absolutely.

A. Okay. We're going to say 1.3 seconds. And you want to assume 25 miles per hour?

Q. Well, I thought you measured 25 miles per hour.

A. We measured it for 180 forward. We didn't measure it from 174. I think we can use that as an assumption, but it's probably not exact.

Q. Why don't you go back to the chart you're talking about.

A. What I need is the report. Where is that? Here. Okay.

Q. Now, in this chart you have indicated to the right how you measured the speed?

A. Right.
Q. And those measurements were based on the video from Red Rock?
A. Correct.
Q. And your measurement of the distance traveled and the time that elapsed?
A. Specifically, you see these highlighted frame numbers. Those are .2 seconds apart. We can measure how far the bus has gone in those .2 seconds, and we've got the distance and the time to calculate the speed.
Q. So what is the average speed between 180 and the last one, 202?
A. Well, I'd have to pull up the spreadsheet. Here, you're seeing the average within each of these time periods of .2 seconds. So --
Q. But the average over the entire distance?
A. I'd have to get the spreadsheet to do the full average. We can look at it and say it's up to 25.8 here, and now it's going slower. It starts out a little slower. So I think that 25 is a reasonable assumption between 180 and 202.
Q. So now go back to the one we were

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looking at, at 174.

A. All right.

Q. So, if you assume that the bus traveled at 25 miles per hour between 174 location and 187, how far did the bus travel?

A. Okay. So we're going to assume that. I didn't calculate it.

Q. I understand you only calculated from 180 to 202. I'm asking you to assume that that average is valid from 174 to 187.

A. So 25 miles per hour. And then we're going to apply a conversion.

Okay. So the conversion is 25 times 1.467. So that would be equal to about 36.7 feet per second. And then we're going to say it's going to travel 1.3 seconds. Times 1.3. That's 47.7 feet of travel distance.

Q. So what is the distance again, sir?

A. Travel distance, 47.7 feet between position 174 --

Q. This position here, 187?

A. -- and 187.

Q. So 187, the doctor meets the bus. Back to 174 is 47 feet?

A. Approximately, if you use that 25 miles

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per hour. If you want, I could actually bring up and measure the actual distance based on the matched photo. It might be a little less than that.

Q. Taking the 47 feet into account, do you have any evidence that you used to determine what the average speed of the bike was over the same 1.3 seconds?

A. I did not. I did not have any evidence to know the speed of the bike over that time.

Q. If we assume the same speed of the bike that you assumed earlier when you were talking about Mr. Plantz, of 12 miles per hour. Okay?

A. 12 miles per hour. Okay.

Q. Over the 1.3 seconds, how far did the bike travel?

A. So 12 miles per hour times that same conversion factor, that's equal to 17.6 feet per second, times 1.3 seconds. So that would be 22.9 feet.

Q. Now, can you put the bike at 22.9 feet back from 187?

A. Sure.

Q. Would you be so kind.

A. It would be easier for me to do it

without all these buses present. Do you mind if I just turn on the ones that you are talking about?

Q. Okay. Leave 174.

A. Okay.

Q. 187.

A. So you want 187. So 174 would be this one. So this is 174.

Q. Can you take out the bike?

A. Take out the bike.

Q. Now show us 187.

A. Okay. Get rid of this little artifact as well.

187 is here. Okay.

Q. Okay. So the distance from the top of 187 to 174 is how many feet?

A. It's approximately -- here, it's 46.1 feet.

Q. Okay. Now I want you to move the bike -- is this 187, where you have him here?

A. Yes.

Q. I want you to move him back 22 feet.

Was it 22 that you found?

A. 22.9.

Q. 22.9.

A. You want a bike that's leaning over like this or one that's upright?

Q. Just upright.

A. So what I'll do, then, is I'm going to grab this guy that we hid before and move him. Okay.

Q. Okay.

A. Now, I haven't figured out the distance. You said you wanted 22.9 feet back?

Q. Well, I wanted the distance the bike would have traveled during the 1.3 seconds that the bus went between 174 and 187.

A. So, again, I don't know how far it traveled, but if you assume 12 miles per hour for the bicycle --

Q. Correct.

A. -- then I can calculate that distance over 1.3 seconds as 22.9 feet. So what I'm going to do is I'm going to start the bicycle at this location. You can see it is upright instead of kind of leaning into the bike. Then I'm going to move it back 22.9 feet.

Q. Okay.

A. So 22.9 feet. Then I'm just going to confirm the measurement here. I don't really know what position it is in, so I probably should just

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have it the same way it was as opposed to assuming. Make it parallel to the crosswalk lines here. And double-check the measurements. 22.7 feet. So it's got to go .2 feet more.

Let's try that again. Oh, I know why. So let's say -- okay. We're in the ballpark here.

Q. Okay. Can you show us the whole thing you've created there?

A. Yep.

Q. Can you see -- you can reduce the size, but can we see more of the bus at 174. All right. That's good.

Now, if I understand what you have done, then, your analysis fixes this bus at 187?

A. Yes.

Q. And this is true and correct. And if we had been in our hot air balloon, that's where it would have been?

A. Correct.

Q. This is at 174?

A. Yes.

Q. And this is true and correct and where it would have been if we were there in our hot air balloon?

A. As far as the front. I'm not a hundred

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percent sure about the back of the bus, but the front of the bus, yes.

Q. True and correct, absolute fact; not abstraction, not hypothetical?

A. Correct.

Q. Now, the bike here at this position is based on your conclusion that you have described?

A. Yes.

Q. The only thing I asked you to assume was the speed of the bike.

A. Correct.

Q. Because you measured the speed of the bus --

A. Yes.

Q. -- and averaged it, used that 25?

A. Which is approximately right, yes.

Q. And then -- but you were given or you assumed or you accepted 12 miles per hour for the bus?

A. For the bicycle.

Q. Sorry. For the bicycle.

A. Hypothetical for the most part.

Q. But it's something that you were comfortable with?

A. I don't know what to be comfortable

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with, to be honest. I've ridden at speeds that are that the speed; I've ridden at higher and lower.

Q. You were told to use 12 and you did?

A. Yes.

Q. And you have no way of independently verifying that 12 is correct?

A. That's right.

Q. All right. I want you to take out the bus from 187.

A. Okay.

Q. And I want you to take out the bike that you have located next to the bus at 174. Okay?

A. Yep.

Q. Can you back it up a little bit so we can see the -- so based on your model, the assumption about the bike's speed, right, and the fact that the bus hit at 187, that's what would have been in existence at the time the event began?

A. I think the only other thing I would add to that description to make it a hundred percent correct is that we also, in addition to not knowing the speed of the bike, we don't know the position of the bike. So it could have been here,

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outside the bike lane. It could have been in the bike lane. We just don't know.

Q. But in terms of where it was in front of the bus, that's a fair and accurate representation based on your work as to where the bike was in front of the bus when the incident began to unfold?

A. Again, I don't know where the bike was at this point.

Q. But in terms of in front of?

A. You're talking about the distance?

Q. From the bumper to the bike.

A. I mean, if you assume 12 miles per hour, it would be -- it could be here, you know, it could be down here some or up here some, but we just don't know. In that direction we don't know. It could have been there. It's possible.

Q. But it would have been about 12 feet in front of the bus, half the distance?

A. 12 feet? Where is that coming from? You said 12 miles per hour.

Q. I'm sorry. How much distance between the bus in this depiction and the bike?

A. So you want to know the distance from the rear tire of the bike to the front of the bus?

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Q. Yes.
A. Okay. Looks like about 10 feet.
Q. Okay. All right. So at the time this began to unfold, then, are you relatively confident, assuming only the speed of the bike, that the bike was about 10 feet in front of the bus?
A. Not really.
Q. Why not?
A. Because, again, I don't have any way of knowing where the bike was. So if the bike is further down here, then, you know, it would be back and forth a little bit. So there's a lot of assumptions at play here.
I mean, we can look at this, and it's a good hypothetical to look at, but I wouldn't want to get tied to 10 feet in front of the bus. I think it would be a mistake to do that.
Q. But, in any event, it is some distance in front of the bus?
A. Assuming a 12-miles-per-hour speed, yes.
Q. At the time this event unfolds, we've already determined that the bus is beginning to move to the left?
A. That is true. It looks like it's

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starting to move to the left from 174 on, yes.
Q. Now, do you have any expertise in determining perception-reaction?
A. No.
Q. You know it exists?
A. I've worked on cases where it's discussed a lot, so I know it exists.
Q. But you don't know what it is or how it would factor in?
A. I guess what I would say is I'm not a learned expert in that field, so I would hesitate to offer an expert opinion. But I know enough about it to talk about it, and I can certainly hear your question.
Q. Well, if there's a perception-reaction time involved -- by the way, did you read the testimony of Mr. Hubbard?
A. I did not.
Q. Do you know anything about what he said he did when he saw the bike in front of him coming into his lane?
A. I don't recall exactly.
Q. Okay. So you don't know whether or not he said he made a left-hand turn?
A. I don't know.

Q. So if we consider your model, your analysis of where the bus is, the bus path was, as a fact?

A. Okay.

Q. If we consider where Dr. Khiabani was when he made contact as a fact or as an opinion based on fact and a good assumption -- correct?

A. The assumption being 12 miles per hour for the speed?

Q. No. The assumption being that the shadow that you saw against the bus was, in fact, Dr. Khiabani and that's where he struck or came in contact.

A. In other words, the assumption is around where was Dr. Khiabani when he had made that initial contact?

Q. Correct.

A. That's a good assumption. That's a good analysis of the situation based on the evidence that we have.

Q. And that's frame 187?

A. Correct.

Q. If we take the speed of the bus and the speed of the bike that you were directed to use, 12 miles per hour --

A. Yes.
Q. -- and back it up, we get a picture that looks like this?
A. Something like this.
Q. And at this point, the bus is already turning to the left?
A. I don't know if I would use the word "turn," just because I don't know if it was turning or not, but it was clear that there was some movement happening to the left, and what the source of that is is not a hundred percent sure.
Q. In terms of this model, your model, and this picture that we have identified here --
A. Yes.
Q. -- can you now back this up a second?
A. You want me to move people back a second from here?
Q. One second.
A. So one second at 12 miles per hour.
Q. Well, the bus first, if you would.
A. Okay. Hold on. So we're changing it enough that I'm just going to make a different copy of this thing in case we need to get back to the old one for some reason.
Q. Okay.

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A. What speed do you want to use for the bus?

Q. Well, the same speed that you calculated between frames 180 and 202 -- 25.

A. 25 miles per hour times 1 point -- 25 miles per hour equals 36.7 feet per second times 1 second equals 36.7 feet. And 12 miles per hour is what you want to use for the bike still?

Q. Well, I believe that the expert that has testified before you, Caldwell, accident reconstructionist for plaintiff, said 12.

A. So you want to use 12?

Q. I want to use 12.

A. So 12 miles per hour equals 17.6 feet per second, times 1 second equals 17.6 feet. So you want me to back him up accordingly?

Q. Yes.

A. Okay. I'm going to back this guy up.

Okay. There's the new picture for you, one second previous.

Q. One second earlier?

A. Yeah.

Q. What is the distance between the bus and the back tire of the bike?

A. Oops. Hold on. Let's try that again.

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It's about 29 feet, 29 1/2 feet.

Q. How much has it increased since the last model I asked you to prepare?

A. Let's see. The last one, it was roughly 10, so about 19 feet.

Q. Would it be fair to say, then, as we back this up, every second we back this up the bike moves 10 feet farther in front of the bus?

A. If you assume those speeds and if you assume there's no other steering movements, which we have no idea if that's the case, then that would be a fair assumption.

Q. Okay. If Mr. Hubbard made a turn to the left intentionally, do you have any idea what he saw that told him he needed to turn to the left?

A. No.

Q. But there is no question in your mind but that the bus was moving to the left at least as early as frame 170?

A. No. I would say 174 was the frame where you see that there's -- from there on, it's clear there's some movement to the left. That's the extent of the frames that we have available to review.

Q. But you had the front of the bus at 170?

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A. No, 174.
Q. 174. So it's clear, then, that from 174 forward the bus is moving to the left?
A. That's right.
Q. And -- okay. Thank you, sir. That's all I have.
Oh, wait.
On this model that you've drawn right here, sir --
A. Yes.
Q. -- can you show us what the driver, bus driver, would have seen?
A. From this arrangement? Yes.
There you go.
Q. Okay. Mr. Pears?
A. And, again, I should point out this assumes that he's kind of leaning slightly to the left, so it's possible he would have been sitting differently in the seat. But he is obstructed at this position by the A-pillar.
Q. And Mr. Plantz?
A. So he's obstructed by the bus driver at this point.
Q. Okay. Go back to the bus driver.
A. Okay.

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Q. What does he see if the bike is where it is in this -- and this is what the driver would have seen one second before frame 174?

A. Under a lot of assumptions, this is what he could have seen, yes.

Q. What are the assumptions?

A. So we're assuming a speed of both the bus and the bicycle that we are not sure of. And we're assuming, you know, steering events that may or may not have happened.

And then the other thing I should say is we don't know for sure exactly what the driver was looking at or exactly how they were positioned. But this is a good -- it's a good possible -- a good possibility that this might have been what they had seen about a second before.

Q. So the only assumptions are the speed of the bus and the speed of the bike?

A. The speed of the bus, the speed of the bike, whether or not there was any steering movements. We don't know those for sure. And also, you know, what the position of the bus driver or what he was looking at, we don't know that for sure either.

Q. What the driver was actually looking at?

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