

Page 1

1 IN THE COURT OF CLAIMS OF OHIO  
 2 PORTAGE COUNTY, OHIO  
 3  
 4 JASON WOLGAMOTT, et al.,  
 5 Plaintiffs,  
 6 vs.  
 7 E.R. TRUCKING, INC., et al.,  
 8 Defendants &  
 9 Third-Party Plaintiffs,  
 10 vs.  
 11 ODOT, et al.,  
 12 Third-Party Defendants.)  
 13  
 14  
 15 Deposition of JO ELLIS DAVIDSON, a Witness herein,  
 16 called by the Third-Party Defendants for  
 17 cross-examination pursuant to the Rules of Civil  
 18 Procedure, taken before me, the undersigned, Melissa  
 19 Karm, a Stenographic Reporter and Notary Public in and  
 20 for the State of Ohio, at the offices of Black, McCuskey,  
 21 Souers & Arbaugh, 1000 United Bank Building, 220 Market  
 22 Avenue South, Canton, Ohio, at 5:00, p.m., on Monday, the  
 23 22nd day of December, 1997.  
 24  
 25

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 COURT OF CLAIMS DEFENSE

No. 97-03611-PR

Page 2

1 APPEARANCES:  
 2  
 3 On behalf of the Plaintiffs:  
 4  
 5 Young & McDowall  
 6  
 7 By: Dean A. Young, Attorney at Law  
 8 507 Canton Road  
 9 Akron, Ohio 44312  
 10  
 11 On behalf of the Defendant & Third-Party Plaintiffs:  
 12  
 13 Black, McCuskey, Souers & Arbaugh  
 14  
 15 By: Robert E. Soles, Attorney at Law  
 16 Gust Callas, Attorney at Law  
 17 1000 United Bank Plaza  
 18 Canton, Ohio 44702  
 19  
 20 On behalf of the Third-Party Defendants:  
 21  
 22 Ohio Attorney General's Office  
 23  
 24 By: Gregg H. Bachmann, Assistant Attorney General  
 25 65 East State Street  
 Suite 1630  
 Columbus, Ohio 43215

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1 MR. SOLES: Gregg Bachmann is here to take the  
 2 deposition of Jo Davidson who's our expert witness  
 3 in this case. I believe Jo is J-o versus J-o-e, so  
 4 that you know.  
 5 It's my understanding, Mr. Bachmann, that upon  
 6 submittal of an invoice that you were provided, you  
 7 are to see that that's paid within the allotted time  
 8 frame that the State of Ohio allows; is that  
 9 correct?  
 10 MR. BACHMANN: I'm not going to answer your  
 11 questions, Bob.  
 12 MR. DAVIDSON: Then Mr. Davidson is not going  
 13 to be deposed today.  
 14 MR. BACHMANN: It's noted, Mr. Davidson, that  
 15 you submitted an invoice.  
 16 THE WITNESS: I took the liberty of drawing one  
 17 up. If you have strong objection --  
 18 MR. SOLES: We'd like to have you look at it  
 19 now that you are basically going to submit this  
 20 invoice for payment for Mr. Davidson's time to come  
 21 here today to testify. If this isn't submitted,  
 22 there is no reason to even go forward.  
 23 MR. BACHMANN: I will submit it. We will take  
 24 care of it. I don't cut the checks, Bob.  
 25 MR. DAVIDSON: I basically just want to know

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1 that you are going to submit it for payment, as long  
 2 as you don't have any objection or feel that it's  
 3 unreasonable or out of line.  
 4 MR. BACHMANN: I'll submit it. Now it does say  
 5 here you do have a specified number of hours for the  
 6 time of the deposition. If that changes then the  
 7 amounts will change obviously, right?  
 8 THE WITNESS: Yeah. We're starting at -- let's  
 9 call it 5:00.  
 10 MR. SOLES: I just want to make sure there is  
 11 no objection to the payment of his invoice.  
 12 MR. DAVIDSON: I'm not trying to be difficult.  
 13 I want to be fair.  
 14 MR. BACHMANN: So do we. I appreciate your  
 15 being straightforward actually.  
 16 JO ELLIS DAVIDSON  
 17 of lawful age, a Witness herein, having been first duly  
 18 sworn as hereinafter certified, deposed and testified as  
 19 follows:  
 20 CROSS-EXAMINATION  
 21 By Mr. Bachmann:  
 22 Q Please state your full name for the record.  
 23 A Jo, J-o, Ellis, E-l-l-i-s, Davidson,  
 24 D-a-v-i-d-s-o-n.  
 25 Q Mr. Davidson, what is your address?

1 A 5421 Normlee Place, Pittsburgh, Pennsylvania 15217.  
 2 Q Mr. Davidson, did you bring any documents with you  
 3 today? Can you just tell me what you brought in this  
 4 packet.  
 5 A Photocopies of photographs of the accident scene;  
 6 the roadway taken at various times after the accident;  
 7 copies of the earlier version of Sgt. Veppert's report.  
 8 He's expanded it. I've been given a copy. We're kind of  
 9 looking at it.  
 10 There is a copy of Mr. Daecher's report; complaints;  
 11 some notes on research that I did on skid testing on a  
 12 concrete surface with excess tar at the surface;  
 13 calculations I did; a copy of my report; the Ohio State  
 14 Highway Patrol accident investigation report.  
 15 Q Is that all the documents you were given to review?  
 16 Are they all in this packet?  
 17 A Up to today. Sgt. Veppert's drawings and his  
 18 expanded report and his notes, I just got today.  
 19 Everything I had when I left town this morning is in the  
 20 file.  
 21 Q Is there a copy of your contract? Do you have a  
 22 contract?  
 23 A No. I just have an oral agreement.  
 24 Q With Black, McCuskey?  
 25 A Mr. Soles on behalf of Black, McCuskey.

1 Q Correspondence that Mr. --  
 2 A Yeah, sure. There were some letters back and forth.  
 3 Q This is your complete file in other words?  
 4 A Yeah, except for the material I got today.  
 5 Q What I'll do is I'll take a moment and just flip  
 6 through it if that's all right with you?  
 7 A Yes. There a number of copies of my resume. I  
 8 didn't know how many people were going to be here, so I  
 9 got five copies.  
 10 MR. CALLAS: Off the record.  
 11 (Thereupon, a discussion was held off the  
 12 record.)  
 13 MR. BACHMANN: Mr. Davidson, my name is  
 14 Gregg Bachmann. I'm an assistant attorney general  
 15 representing ODOT in this Wolgamott litigation. I'm  
 16 here to take your deposition by agreement of the  
 17 parties.  
 18 If I ask you a question and you don't  
 19 understand what it is that I have asked or if you  
 20 feel I've mischaracterized or misquoted or somehow  
 21 misrepresented or misstated something, or if you  
 22 just don't understand what I've asked, do you  
 23 promise to ask me to restate or rephrase the  
 24 question?  
 25 THE WITNESS: Certainly.

1 MR. BACHMANN: Thank you. You've had your  
 2 deposition taken before?  
 3 THE WITNESS: Yes, sir.  
 4 MR. BACHMANN: So you know you've got to keep  
 5 your voice up and respond verbally?  
 6 THE WITNESS: Yes.  
 7 By Mr. Bachmann:  
 8 Q How many times have you had your deposition taken  
 9 before?  
 10 A 100.  
 11 Q What is it that you do for a living?  
 12 A I work as a consultant in forensic automotive  
 13 mechanics. In other words, I investigate incidences  
 14 involving motor vehicles and apply technical and  
 15 scientific knowledge to try to determine what occurred  
 16 and why, if it's possible.  
 17 Q Are you employed by or are your services engaged by  
 18 attorneys?  
 19 A Sometimes, yes.  
 20 Q By who else?  
 21 A Insurance companies, occasionally by police  
 22 departments.  
 23 Q You have testified as an expert before?  
 24 A Yes.  
 25 Q For what police departments have you testified as an

1 expert?  
 2 A Well actually it wouldn't be for the police  
 3 department. It would be for the County of Allegheny or  
 4 the County of Blair or the Commonwealth of Pennsylvania,  
 5 something like that.  
 6 Q When they have been sued?  
 7 A Usually in criminal cases where I would act as a  
 8 reconstructionist for the prosecution.  
 9 Q How many times have you done that?  
 10 A Ten or twelve or fifteen. I'm not exactly sure.  
 11 Q How many years have you been engaged in this  
 12 business?  
 13 A Going on 29.  
 14 Q Do you do most of your work for plaintiffs,  
 15 defendants or does it not matter?  
 16 A It has no meaning whatsoever to me. I don't even  
 17 try to sort the cases that way. My impression would be  
 18 something around 50/50 or 60/40. I don't count them that  
 19 way.  
 20 Q Mr. Soles engaged you in this?  
 21 A Yes.  
 22 Q What were you asked to do?  
 23 A Look at the material and see what I could tell him.  
 24 Q Did he give you a mission in particular saying, "We  
 25 want you to look at this aspect of it or this aspect of

1 it?"

2 A No. I don't look at stuff that I don't feel

3 personally that I'm qualified to do. It's my decision,

4 not his. You know, I probably gave him the third degree

5 over the telephone about what his case involved, what

6 material was available and send me what you got and let

7 me see what I can tell you about it.

8 Q He didn't say, "I want you to specifically look at

9 the brakes"?"

10 A Well that was a question. You know, "Can you tell

11 me what this means. Can you explain to me what it means

12 that they measured the brake strokes," and so forth.

13 Q What else did he ask you to look at in particular

14 like that?

15 A The whole accident situation, what I can tell him.

16 Q Were you asked to reconstruct the accident?

17 A Not specifically, because I can't tell him until I

18 see the material whether there is enough to work with to

19 do a reconstruction.

20 Q Have you reconstructed the accident?

21 A Not really, no.

22 Q What is it that you have done?

23 A Determined that you really can't do a

24 reconstruction. That's as succinct as I can be.

25 (Thereupon, Davidson Exhibit A was marked

1 for purposes of identification.)

2 By Mr. Bachmann:

3 Q I'm handing you what has been marked as Davidson

4 Exhibit A.

5 Can you tell me what that is.

6 A Yeah. It's a copy of the report that I submitted to

7 Mr. Soles.

8 Q You said that you couldn't really -- well let me ask

9 you this before we get too much further into it.

10 Have you read any materials other than what's set

11 forth in this report?

12 A In reference to what?

13 Q In preparation -- well let me break it down.

14 In creating your report, did you review any other

15 materials?

16 A Yes.

17 Q What else did you review?

18 A Hundreds of articles. I have a fairly extensive

19 library and I went through everything that had anything

20 to do with truck brakes at all or coefficient of friction

21 or skid testing or anything like that. I went through

22 all that material again.

23 Q So you read articles on brakes and the coefficient

24 of friction?

25 A Skid testing.

1 Q What else?

2 A Texts on traffic accident reconstruction.

3 Q What else?

4 A That pretty much covers it.

5 Q So other than the articles that you reviewed and the

6 items that are listed in Davidson Exhibit A, did you

7 review anything in preparation for this report?

8 A Yeah. I looked back through my data base at some

9 old cases that involved bituminous concrete surface where

10 there was excess tar at the surface and tried to get

11 whatever information from those files that might be

12 applicable or of interest or anything to this particular

13 case although none of them involved heavy trucks.

14 Q Were there any drafts or preliminary matters to this

15 report?

16 A I write on a word processor and saved the disk.

17 Every time I bring it up I rewrite it or revise it or

18 shorten it or lengthen it or do something with it, but I

19 don't bother to save all of that. I save the finished

20 product, which you have in your hand as Exhibit A.

21 Q Is this the only product that you sent to Mr. Soles

22 in terms of a report?

23 A Yes.

24 Q Have you reviewed anything subsequent to Davidson

25 Exhibit A?

1 A Yeah.

2 Q What have you reviewed?

3 A I dug out an article on setting speed limits in

4 curves.

5 I dug out an article on determining the speed of a

6 heavy duty vehicle with hopping suspension during brake

7 application and determining its speed from the spacing of

8 the skip skids. Lord, I don't know what else. You know,

9 I don't just stop. I have a tendency to keep going.

10 Q Have you been provided with any depositions or any

11 statements or other documents relating to the facts of

12 this case?

13 A What you see there plus what I was given today,

14 which is Sgt. Veppert's expanded report and his drawings

15 and photocopies of his field notes.

16 Q Okay.

17 Have you read Mr. Ruegg's deposition?

18 A No.

19 Q You haven't read any of the depositions?

20 A No.

21 Q You did have a conversation with Mr. Ruegg though,

22 correct?

23 A Yes, I did.

24 Q Did you have a telephone conversation?

25 A Yes.

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1 Q Did you call him up or did he call you up?  
 2 A No. Mr. Soles called me and had Mr. and Mrs. Ruegg  
 3 in his office and we had a conversation on the  
 4 speakerphone.  
 5 Q Was that the only --  
 6 A That's the only contact. I met him this afternoon  
 7 to say, "Hello. How are you? I hope you're fine."  
 8 I have never spoken to them otherwise.  
 9 Q What was the purpose of that call?  
 10 A I wanted to see, among other things, what he could  
 11 tell me about what he did during the course of this  
 12 accident in terms of brake applications and so forth.  
 13 There was a question of whether I could determine  
 14 the road speed of the vehicle from the engine speed, the  
 15 gear in which the transmission was placed and rear axle  
 16 ratio and tire size. I said yes and he was able to give  
 17 me the information for his tractor.  
 18 I contacted a friend who has the transmission  
 19 manuals and got the ratios for gears and did that  
 20 calculation and put it in the report.  
 21 Q What else did you discuss?  
 22 A That's about the size of it. We also talked about  
 23 what he recalled doing during the course of the accident.  
 24 Q Can you tell me what he said?  
 25 A He came around the curve. He realized that the

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1 traffic was stopped. It was backed up further than  
 2 he -- he doesn't drive that road frequently. He hadn't  
 3 driven it for perhaps a month prior to the date of the  
 4 accident. He came around the curve. He was in ninth  
 5 gear. His engine was running against the Jake Brake at  
 6 about 1,800 to 2,000 RPIS. He saw the van much further  
 7 back than his recollection of traffic backing up from the  
 8 railroad crossing. He hit the brakes. His trailer  
 9 started to hop. He was afraid he was going to lose  
 10 control. He wanted to go to the right and go off the  
 11 road on the right. He saw a Pontiac start to pull out to  
 12 the right, so he released the brake, steered left  
 13 reapplied the brakes, then collided with the van.  
 14 I paged through my report and in the last full  
 15 paragraph I tried to summarize what he had told me.  
 16 Q Did he tell you anything else at all which you can  
 17 recall?  
 18 A He was going home, I think, which was not a road he  
 19 usually used, but he wanted to stop at home. I don't  
 20 know. It was something to that effect.  
 21 He went back several days later and it looked like  
 22 the tire marks from his tractor/trailer and from Mr.  
 23 Skidmore's tractor/trailer were almost gone. He thought  
 24 that was pretty strange.  
 25 Q What seemed strange about that?

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1 A That the skidmarks were disappearing and that they  
 2 usually don't.  
 3 Q Mr. Ruegg was saying that?  
 4 A No. Yeah. Well that was his experience, into that  
 5 if you put skidmarks on blacktop paving, they tend to  
 6 stay there for a long time.  
 7 Q Why did you say they usually don't disappear?  
 8 A They don't. They just plain don't. They stay there  
 9 for months except the part of them that's right in the  
 10 wheel tracks. That will be erased in a reasonably short  
 11 time. But where they diverge from the wheel tracks where  
 12 the traffic normally runs, they will last for months and  
 13 months.  
 14 Q Do you know if there is a reason why they didn't  
 15 remain that long?  
 16 A I have my conclusion.  
 17 Q What is your conclusion?  
 18 A That that surface had excess tar and that they  
 19 weren't full normal skidmarks.  
 20 Q How did you arrive at that conclusion?  
 21 A Primarily from the photographs of the accident  
 22 scene. Not the ones taken later, but the ones that were  
 23 taken right there with the vehicles still in their final  
 24 positions.  
 25 Q Show me which photos show the excess tar.

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1 A Well they don't show excess tar. They show some tar  
 2 on the surface of the tire treads of what I interpret to  
 3 be and somebody else may disagree.  
 4 Here's a photograph that shows the left rear drive  
 5 axle tires of the tractor. In my experience, what I'm  
 6 looking at on that tread surface is tar. They are not  
 7 just clean. They are tar coated. The only place they  
 8 pick up tar is off the pavement surface. It's not a  
 9 freak of the photo copying, because I looked at the  
 10 original prints that Sgt. Veppert brought with him.  
 11 That's why I wanted to look at the original prints.  
 12 Here's another one that shows the same thing.  
 13 Here's another one that shows the right rear drive axle  
 14 tires and they show the same thing.  
 15 Then looking at the tire marks -- for example, this  
 16 photograph taken looking toward the rear of Mr. Ruegg's  
 17 trailer in its final position, that photograph has full  
 18 black values in it and yet those skidmarks that should be  
 19 as black as anything else are not. They are kind of a  
 20 washed-out gray. They should show up black as pitch.  
 21 Q Where is the washed-out gray?  
 22 A The tire marks. All the tire marks. They are just  
 23 washed-out gray. They are not showing up full black. I  
 24 mean the tractor/trailer is supposed to have been  
 25 skidding for over a hundred feet before the marks appear

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1 in that photograph and the tires are throwing up smoke.  
 2 They are not ironing the surface like they normally do.  
 3 Tire marks, in my experience, should show up just as  
 4 black as the shadow under the trailer.  
 5 Q What do you attribute this to?  
 6 A Excess tar on the surface. When it's floating on  
 7 the tar, it's not really melting it and ironing it the  
 8 way a skidding tire will. It's just floating on the tar.  
 9 Q Why would there be excess tar?  
 10 A Why would there be?  
 11 Q Yes, sir.  
 12 A It's a new surface. It's a hot summer day. I don't  
 13 know.  
 14 Q Do you know when the road had been resurfaced?  
 15 A I don't recall. Several weeks prior to this.  
 16 Q In your experience, how long does this excess tar  
 17 condition last?  
 18 A I don't really know. I am not one to see how long  
 19 it stays that way. I guess until it's picked up enough  
 20 dirt and so forth to lose that characteristic.  
 21 Q Are you an expert at all in roadway construction or  
 22 asphalt composition?  
 23 A No. I don't prepare myself to be.  
 24 Q When were you engaged by Mr. Soles?  
 25 A The 7th of March, 1997.

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1 Q Did you have an opportunity to inspect the truck  
 2 that was in the accident?  
 3 A No.  
 4 Q Did you get a sample from the tires at all?  
 5 A No.  
 6 Q So your conclusion that the surface had excess tar  
 7 comes from three sources:  
 8 One, Mr. Ruegg saying that the tire marks weren't  
 9 there a couple days afterwards.  
 10 Two is by the photographs, by looking at the  
 11 photographs that show the drive axles of the trailer or  
 12 of the tractor that there was tar on the tires.  
 13 Three, that the skidmarks are somewhat grayish and  
 14 not pitch black.  
 15 A Yes. I rely more heavily on the photographs than  
 16 Mr. Ruegg's statement.  
 17 Q What did you mean when you said that they weren't  
 18 full, normal skidmarks?  
 19 A My experience of heavy-duty truck tire skidmarks,  
 20 passenger cars, light trucks, medium trucks, anything on  
 21 rubber tires that skids for any appreciable  
 22 distance -- let's say more than 20 feet on concrete  
 23 surfaces -- leave very black, very durable skidmarks.  
 24 They really alter the surface permanently and they show  
 25 up in photographs as black. I mean blacker than the

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1 pavement surface. It's like running a hot iron over  
 2 starch. It changes the surface. It's a permanent  
 3 change. These don't look that way. They don't look  
 4 black. The contrast values are in all the photographs.  
 5 They are full black values in every one of these  
 6 photographs and yet the tire marks on the pavement from  
 7 both the tractor/trailers, both Ruegg's and Skidmore's,  
 8 don't show up black. They look washed-out gray.  
 9 Q Do you know what the chemical composition of the  
 10 asphalt was?  
 11 A No.  
 12 Q You don't get into that? That's not your area of  
 13 expertise, right?  
 14 A No.  
 15 Q Is there anything else that Mr. Ruegg told you or  
 16 did you keep notes of the conversation?  
 17 A I made notes as I talked to him. When I wrote the  
 18 report I discarded them.  
 19 Q Is there anything else that came up in the course of  
 20 conversation with Mr. Ruegg?  
 21 A He said something about oily stuff on the surface,  
 22 but I didn't quite know what to make of it. I didn't pay  
 23 too much attention to it. I relied on what I saw  
 24 primarily in the photographs.  
 25 Q Oil on the surface of the roadway could have been in

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1 this photograph? The one that you showed me?  
 2 A Yeah. It's very rarely delineated between the  
 3 trailer and the side wall. It's so sharply black on the  
 4 treads of the tires that the only time I've ever seen  
 5 that is when they track through tar.  
 6 Q Do you know in looking at this photograph  
 7 here -- it's the photograph of the minivan with the  
 8 jackknifed tractor/trailer right next to it. It looks  
 9 like the surface of the pavement is wet.  
 10 Do you know what that fluid is?  
 11 A I don't know whether it's wet or just in deep  
 12 shadow, because there is a sharp delineation back here.  
 13 It may be just a function of being in full shadow.  
 14 That's what I would interpret it to be. I know that  
 15 there was some spill. I think Mr. Ruegg said something  
 16 about he was losing oil from his hoist or something. He  
 17 tried to shut off the oil. I don't know whether he was  
 18 successful or not.  
 19 Q Now looking at this same photograph, you see the  
 20 tires on the far side there?  
 21 A Not really well, but yeah, you can see a little bit  
 22 of the tops of them.  
 23 Q Is that same delineation there as well?  
 24 A No. But they show up in the other photograph I  
 25 think. Yes, in this photograph. (Indicating.) The one

Page 21

1 I'm holding in my right hand are the right drive axle  
 2 tires of the tractor. The one -- wait a minute. I'm  
 3 backwards. The one I'm holding in my left hand is the  
 4 photograph of the right drive axle tires.  
 5 Q Okay.  
 6 A The difference is in the way the light is hitting  
 7 them, the ambient light.  
 8 Q How long did this conversation last with Mr. Ruegg?  
 9 A Ten or twenty minutes. I don't know.  
 10 Q So really the substance of your conversation was him  
 11 describing how he came around the curve. There was  
 12 traffic stopped and backed up. He was traveling at the  
 13 speed of 1,800 to 2,000 RPMs in ninth gear. He saw the  
 14 van. The trailer began to hop. He wanted to go right.  
 15 A Well first he applied the brakes then the trailer  
 16 began to hop.  
 17 Q He wanted to go right. There was a white car to the  
 18 right.  
 19 A Well the white car started to go to the right. He  
 20 released the brakes and steered left and came down  
 21 again. By that time, he hit the van.  
 22 Q When you were first describing what Mr. Ruegg had  
 23 told you, you said that he had seen the van much further  
 24 back.  
 25 What did you mean by that?

Page 22

1 A His impression was that the van was way further back  
 2 from the railroad crossing than his experience of traffic  
 3 stopped for the railroad crossing had been. That's  
 4 essentially what he was saying.  
 5 Q In other words, he was saying there was more traffic  
 6 than he had seen?  
 7 A There were more cars stacked up with more space  
 8 between them. The van was further back than he expected  
 9 to see any kind of traffic backed up from the railway  
 10 crossing.  
 11 Q What specifications for the tractor/trailer did  
 12 Mr. Ruegg furnish?  
 13 A Model number of the transmission; final drive ratio  
 14 of the drive axles; tire size; the engine RPMs; and the  
 15 gear he was in at the time.  
 16 Q Do you know what the design capacity of the trailer  
 17 was in terms of load-carrying capacity?  
 18 A I haven't worked that out. I don't know.  
 19 Q That wasn't in what he provided you?  
 20 A The trailer was empty.  
 21 Q But do you know what its load-carrying capacity was?  
 22 A No.  
 23 Q Do you know what he hauled in his rig?  
 24 A Apparently he had been hauling crushed stone for a  
 25 period before the accident.

Page 23

1 Q Do you know how often Mr. Ruegg adjusted his brakes?  
 2 A No.  
 3 Q Do you know when the last time it was that they were  
 4 adjusted?  
 5 A No.  
 6 Q Do you know if the vehicle had been taken out of  
 7 service in the year prior to the accident?  
 8 A I believe it had been. I don't recall specifically,  
 9 but I believe it had been.  
 10 Q Did you review Mr. Ruegg's maintenance records?  
 11 A Not really.  
 12 Q On Page 2 of 5 in Davidson Exhibit A, in the last  
 13 full paragraph -- I'm looking at the last line.  
 14 It says: "Both reconstructionists cited above  
 15 assumed that the brakes of the HDVC were held applied  
 16 from beginning to end and were not aware of any period of  
 17 brake release, whether full or partial, which assumption  
 18 makes their calculated values of the initial speed of the  
 19 Ruegg HDVC too high."  
 20 Can you explain that to me.  
 21 A Just exactly what it says. If they assumed that  
 22 Mr. Ruegg put the brake pedal down fully and held it  
 23 there until the tractor/trailer stopped moving in its  
 24 final position -- and, in fact, he had not -- then their  
 25 estimates of speed will automatically be too high.

Page 24

1 Q What proof do you have that the brakes were not  
 2 applied continuously from beginning to end?  
 3 A Well first of all the trailer tires weren't on the  
 4 ground all the time. Let's start with that. If we look  
 5 at the photographs taken at the scene, for example this  
 6 one or this one, either one that I'm holding up, they  
 7 show views of the rear of the Ruegg semi-trailer.  
 8 (Indicating.) You can see where his rear tires are on  
 9 the ground.  
 10 If you can show me dual tire skidmarks leading right  
 11 up to those tires, I'll throw myself out the window.  
 12 I'll be real straight.  
 13 Q You lost me now.  
 14 A Look at the rear tires of the trailer.  
 15 Q Tell me what it is that you see.  
 16 A Well I don't see any skidmarks going up to those  
 17 tires.  
 18 Q Okay. What are --  
 19 A I don't think anybody else can see any skidmarks  
 20 going up to those tires, which means that the trailer  
 21 tires were not skidding on the ground when the vehicle  
 22 went to its final position. Therefore, the assumption  
 23 that the brakes were held fully applied and the tires  
 24 were skidding on the ground from the beginning to the end  
 25 is wrong, pure and simple. It's wrong.

Page 25

1 Q Do you know how long his foot would have been off  
2 the brakes? Can you tell from this?  
3 A I can't tell you whether his foot was on the brakes  
4 or off the brakes, but I can tell you that those tires  
5 were not skidding on the ground. That's what I can tell  
6 you. Anybody can see in these photographs that those  
7 tires were not skidding on the ground for the last  
8 guesstimate of 15 feet or 20 feet. I don't know. I  
9 don't have a scale in the photograph to tell me. You  
10 can't really estimate the distance from a photograph, the  
11 longitude and distance. They are very hard to do. But  
12 they very definitely -- the tires weren't locked up and  
13 skidding right up to the final position of the trailer.  
14 In fact, in those photographs you can see that the  
15 right trailer tires were bouncing rather violently on the  
16 pavement while the left trailer tires -- well, I'm  
17 sorry. The left trailer tires don't seem to be touching  
18 it at all. You see a series of hot marks, of short wide  
19 skids leading diagonally up toward the right rear wheels  
20 of the trailer in its final position.  
21 Q Do you know what those were from, those short hot  
22 marks?  
23 A Yeah. That is from the trailer. The right rear  
24 trailer tires bouncing off the pavement.  
25 Q What about these other skidmarks that we see?

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1 A Those would appear to be from the tractor, from the  
2 steer axle and drive axle tires of the tractor.  
3 Plus probably by that time the van is more or less  
4 broadsided on the road and is being pushed down the road  
5 by the tractor/trailer and it's most probable that its  
6 left side front and rear tires were leaving skid marks  
7 down the road.  
8 Q I'm looking at a photograph --  
9 MR. BACHMANN: Gust, do you have extra copies  
10 of photos?  
11 By Mr. Bachmann:  
12 Q Show me the other photographs you were relying on.  
13 A Do you want all of them?  
14 Q Yes. Let's just get the ones that we've been  
15 talking about.  
16 A Here.  
17 (Thereupon, Davidson Exhibits B through H were  
18 marked for purposes of identification.)  
19 By Mr. Bachmann:  
20 Q I'm handing you what has been marked as Davidson  
21 Exhibit B.  
22 In that photograph you said that there were some  
23 hopping marks.  
24 A I'd call them bouncing marks right there.  
25 (Indicating.)

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1 Q Those bouncing marks are from Mr. Ruegg's truck?  
2 A That is my conclusion. That is my interpretation.  
3 Q Do you know if they are from -- how many axles are  
4 there on that rig? Five axles?  
5 A Five.  
6 Q Which axle would those be from?  
7 A I would say they are four and five.  
8 Q Then over to the right you've got a series of dual  
9 skidmarks.  
10 A Well you've got a whole series of marks to the right  
11 of them. You've got maybe six in there.  
12 Q What are those skidmarks from?  
13 A Well some of them are from the tractor because you  
14 can see that they loop up forward of the trailer, so they  
15 are definitely not the trailer. There is a lot of  
16 overloading where they widen out. That means downloading  
17 and making the tires jut out.  
18 Q Heavy braking force?  
19 A No. Vertical force and downloading are making the  
20 tires spread. That's not from braking. That's from  
21 vertical load. This has to do -- I think my  
22 interpretation would be that this has to do with the  
23 jackknifing, the element of jackknifing.  
24 There are also some tire marks over to the left from  
25 them and I think one of them probably may be from the

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1 other tractor/trailer. I don't know. One kind of  
2 overlaps then runs under the center of the trailer. It's  
3 pretty hard to sort -- the time to sort this all out was  
4 when both tractor/trailers and the van were sitting there  
5 in their final positions and you can start from wheel  
6 positions and trace the skidmark back to the tire marks  
7 and start from the next wheel position and track them  
8 back and separate them out as to which tire mark is  
9 coming from which vehicle.  
10 Q Are those marked here? These are the ones that we  
11 have marked. Let's refer to those.  
12 A In what has been marked as Exhibit D I can show you  
13 exactly where the Skidmore tractor/trailer stopped.  
14 Q Okay.  
15 A Its trailer wheels -- the leading axle of its  
16 trailer here to the right and here for the left  
17 (Indicating.) The leading drive axle of the tractor on  
18 the right side here to the left area where there are a  
19 whole bunch of other tire marks. The steering axle right  
20 and left over here. (Indicating.)  
21 Q Okay.  
22 So the furthest skidmark to the left of Photograph  
23 D, does that correspond to a skidmark on Photograph B?  
24 A No. The two you see here that are just to the left  
25 of the hot marks, they are the two that are inward of the

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1 left rear tires of the semi-trailer.  
 2 Q Those are from --  
 3 A I'm not sure exactly what they are from. I think  
 4 they are from the tractor, from the Ruegg tractor. Then  
 5 you've got another one that's way outside here.  
 6 (Indicating.) I don't know what that is. That may be  
 7 the van as it's coming around, rotating.  
 8 Q So let's go back to B.  
 9 In B at least you can say that all the skidmarks you  
 10 see there are from Mr. Ruegg's tractor/trailer rig?  
 11 A Well I'm not sure any of them are skidmarks.  
 12 MR. CALLAS: Objection.  
 13 THE WITNESS: They are tire marks, but I'm not  
 14 sure if we're talking about skidmarks or  
 15 scuffmarks. When a tire is turned relative to the  
 16 direction that it's moving, it will make a mark.  
 17 It's called a scuffmark. I can't tell whether these  
 18 are scuffmarks or skidmarks.  
 19 By Mr. Bachmann:  
 20 Q Are they all from Mr. Ruegg's vehicle?  
 21 A No.  
 22 Q Which ones are from his and which ones aren't?  
 23 A I can't tell exactly because there are some tire  
 24 marks from the van. There have to be some with the van  
 25 mixed in there that I can't sort out, because I can't see

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1 enough to be absolutely certain.  
 2 Some of them are from the hop or the bounce marks,  
 3 these big bounce marks. I say they are bounce marks  
 4 because they are wide. They are at wide intervals. I  
 5 interpret them from the right rear trailer suspension  
 6 tires. I don't see anything from the left side trailer  
 7 tires in that area, as if the left side of the trailer is  
 8 up in the air and it's bouncing on its right trailer  
 9 wheel tires.  
 10 Q What would account for those hot marks?  
 11 A Trailers bouncing up in the air pretty violently,  
 12 bang, bang, bang.  
 13 Q Why is it bouncing like that?  
 14 A Because the rig has gone into jackknifing.  
 15 Q So the bouncing that we see in Photograph B is not  
 16 as a result of the braking?  
 17 A Not trailer hopping from braking, but from bouncing.  
 18 Q From the jackknife?  
 19 A From the jackknife and the collision and those  
 20 forces. It's not a trailer hop.  
 21 If you want to see trailer hop, you have to go back  
 22 to Exhibit F. In Exhibit F you can see a pair of hopping  
 23 trailer tires, then a third hopping tire on the left. On  
 24 the right you can see a hopping tire. They are closely  
 25 spaced. They are right in a line and that's what trailer

Page 31

1 hop looks like.  
 2 Q What is that trailer hop in Photograph F? Is that  
 3 from Mr. Ruegg's vehicle?  
 4 A I can't tell you. I cannot actually tell you  
 5 because I can't track them down. The photos just aren't  
 6 good enough for us to be able to track them down.  
 7 Q Assuming it was from Mr. Ruegg's vehicle, what would  
 8 cause that trailer hop?  
 9 A Braking hard on an empty trailer and the trailer  
 10 suspension gets excited harmonically and it starts to  
 11 hop.  
 12 Q Mr. Ruegg had told you over the telephone that his  
 13 trailer hopped --  
 14 A Yes.  
 15 Q -- when he initially applied his brakes?  
 16 A He applied his brakes and then the trailer started  
 17 to hop. I don't know whether he intended for me to  
 18 understand that it immediately started to hop or it  
 19 braked and then started to hop. He wasn't clear.  
 20 Q Is this a result of normal braking or panic braking?  
 21 A Hard braking.  
 22 Q Is it a normal condition? Is trailer hop normal or  
 23 abnormal?  
 24 MR. CALLAS: Objection. Go ahead.  
 25 THE WITNESS: It's normal. On an empty

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1 trailer, they are going to hop. It happens fairly  
 2 frequently even at fairly low speeds. I've been  
 3 behind I don't know how many trailers and watched  
 4 them hop and heard them hop and bang their  
 5 suspension, bang, bang, bang.  
 6 By Mr. Bachmann:  
 7 Q So it could happen on an ordinary braking or on a  
 8 hard braking?  
 9 A It's usually under fairly hard braking. It's not  
 10 common under real easy braking.  
 11 Q We've done B and F. Let's just go through the  
 12 photographs that we haven't.  
 13 I'm handing you what has been marked as Davidson  
 14 Exhibit C. It's another photograph.  
 15 A It's very similar to one of the earlier ones, but  
 16 it's just taken a little closer. If you look at B, C was  
 17 taken a little closer to the rear of the trailer than B.  
 18 In B you can see full hot marks. I'll call them bounce  
 19 marks.  
 20 In Exhibit C, the fourth one is cut in half at the  
 21 edge of the frame. It's the same view, but it's just  
 22 taken from slightly different distances. Exhibit B was  
 23 taken from a point absolutely further away from the  
 24 tractor -- from the trailer.  
 25 MR. CALLAS: Assuming that it's the same length

1 of the lens.  
 2 THE WITNESS: Yeah. Well things look in pretty  
 3 good proportion. I'm satisfied that they are not  
 4 using a different lens.  
 5 By Mr. Bachmann:  
 6 Q I'm handing you what has been marked as Davidson  
 7 Exhibit E. Tell me what that is.  
 8 A That's taken even further back. This is Exhibit E.  
 9 That's the one where you can see exactly where the  
 10 Skidmore tractor and trailer came to a stop in front of  
 11 the Skidmore tractor, which was within a car length of  
 12 the rear of the Ruegg semi-trailer. It was that close.  
 13 Q How did you get that car length measurement?  
 14 A Well you've got a police car parked alongside over  
 15 in the other lane. You kind of guesstimate what the  
 16 front end of it is. It is about even with the back end  
 17 of the trailer. The rear end of the Reese car is about  
 18 even with the steering axle skidmarks from Skidmore's  
 19 trailer end, so I say it's within a car length.  
 20 Q Okay.  
 21 A That, of course, is a fairly full-sized car. I'd  
 22 call it 16 feet.  
 23 Q Exhibit G. We had talked about that earlier, I  
 24 believe.  
 25 A Right. This shows particularly the right rear outer

1 dual tire on the tractor with surface tread. Surface,  
 2 which to me, says tar.  
 3 Q Exhibits H?  
 4 A Exhibit H shows the tread surfaces of the left rear  
 5 drive axle tires of the tractor. Again they exhibit the  
 6 very clean black shiny surface which to me says tar.  
 7 Q Those are the ones we were talking about earlier,  
 8 correct?  
 9 A Yes, that's correct.  
 10 Q And going back to Exhibit A, your report, and Page 2  
 11 of the last paragraph, what in -- we've just gone through  
 12 these photographs. Now perhaps you can go back and  
 13 identify which photograph it is.  
 14 I guess my question is: What evidence do you have  
 15 that the brakes were not fully applied from beginning to  
 16 end? We had talked about that and you had referenced a  
 17 photograph, but we didn't have it marked. Now let's go  
 18 ahead and identify that.  
 19 A It's probably most evident in Exhibits C, B, and D  
 20 that there are no skidmarks leading up to the final  
 21 position of the rear tires of the Ruegg semi-trailer.  
 22 Q So at this point he was off the brakes?  
 23 A I cannot tell you that. I can tell that you the  
 24 trailer tires were not skidding on the pavement. One  
 25 side was obviously up in the air. The left side was up

1 in the air. The right side was bouncing heavily. They  
 2 were not, you know, eight tires in intimate contact with  
 3 the pavement, skidding down the pavement.  
 4 Q So the marks that we see are just when it hits?  
 5 It's not a brake mark? It's just the tire actually  
 6 bouncing on the road?  
 7 A That's my interpretation of it. I cannot tell you  
 8 with certainty whether the right tires of the  
 9 tractor/trailer are braked or not, but the marks are more  
 10 from bouncing than anything else. It's certainly not a  
 11 continuous skidmark.  
 12 The trailer is swinging. It's not going straight  
 13 ahead as if it's skidding. It's swinging as it's  
 14 bouncing, because that line of bounce marks goes  
 15 diagonally to the final position of the right rear of the  
 16 trailer.  
 17 Q So you don't know if the brakes were applied? All  
 18 you're saying is that they were not applied fully at that  
 19 point?  
 20 A No. I'm not saying that at all, Mr. Bachmann. What  
 21 I'm saying is that the tires weren't on the ground to do  
 22 anything, whether the brakes were applied or not.  
 23 Q Okay.  
 24 A The left side of the trailer is up in the air. The  
 25 right side is bouncing. How you treat that for drag

1 factor, I'm not real sure, but it certainly isn't  
 2 skidding.  
 3 Q Can we go back to the last paragraph on Page 2 of 5  
 4 and that sentence -- we have been dealing with that last  
 5 full sentence there, "Both reconstructionists cited above  
 6 assumed that the brakes of the HDVC were applied from  
 7 beginning to end and were not aware of any period of  
 8 brake release, whether full or partial, which assumption  
 9 makes their calculated values of the initial speed of the  
 10 Ruegg HDVC too high."  
 11 Is that different from what you just explained to me  
 12 or is that the same thing?  
 13 A It's really the same thing. Having been questioned  
 14 very closely by you about it, I would write it somewhat  
 15 differently. I would say more than both Sgt. Veppert and  
 16 Mr. Daecher assumed for purposes of their calculations of  
 17 the initial speed of the tractor/trailer that the tires  
 18 were and the brakes were fully applied and all the tires  
 19 were fully on the ground from the beginning to the end of  
 20 the accident sequence. Maybe that's a better statement.  
 21 I see where your questions are coming from and I  
 22 apologize because that does not make it absolutely clear.  
 23 Q Just so we're clear -- and clarity is all important  
 24 in these things -- your prior statement that you don't  
 25 know whether the brakes were applied fully or not is not

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1 really the more clear one.

2 The clear statement is that we know from these

3 photographs -- that are Photographs B and C that --

4 A And D.

5 Q And D that the left rear of the trailer was up in

6 the air and the right rear was bouncing along the ground?

7 A For the last 15 or 20 feet of movement of the

8 trailer until it came to rest.

9 Q You attribute that to the jackknifing?

10 A That is my interpretation, yes.

11 Q Now with that clarification, does that change the

12 conclusion of this last sentence which says, "...whether

13 full or partial, which assumption makes their calculated

14 values of the initial speed of the Ruegg vehicle too

15 high"?

16 A Okay. Whether you take the statement of Mr. Ruegg

17 that he released the brakes at some time during the

18 accident, then reapplied them or you take the

19 photographic evidence that the tires of the trailer were

20 not skidding all the way to its final position, either

21 one will shift their calculated value from the initial

22 speed of the tractor/trailer. The error would be to

23 increase the speed.

24 Q That is the assumption that the brakes were

25 continuously reapplied?

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1 A Either that or that the tires were in intimate

2 contact with the pavement all the way from beginning to

3 end and skidding.

4 Q Why does that increase the speed?

5 A Because the calculation of the initial speed of the

6 vehicle assumes -- both in postcrash and precrash phases

7 of the accident -- that all the wheels are on the ground

8 and braking as hard as they can. Some of them will be

9 skidding, some of them may not be.

10 Sgt. Veppert, for example, uses a method for

11 estimating the effectiveness of the brakes. He uses that

12 to adjust the coefficient of friction of the pavement and

13 also adjusts for the grade of the pavement. He uses that

14 with a distance of travel of the vehicle to calculate a

15 speed at the start of that. He takes the postcrash and

16 he starts his analysis. He work backwards from final

17 position and goes back to the crash. The tractor and

18 trailer traveled a certain distance at a certain

19 deceleration rate which essentially is what the correct

20 brake factor means. It's decelerating at .31G. It works

21 out to be .6 times .51. You wind up with .31. That's

22 what the calculation is. But if it's not decelerating at

23 .31G over that distance, your estimate of its initial

24 speed is going to be too high.

25 If you say that after the crash, the tractor/trailer

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1 traveled 1,700 feet and over that 1,700 feet it was

2 decelerating at an uniform rate of .31G, you will come up

3 with an initial speed of somewhere around 30 miles an

4 hour, which is what Sgt. Veppert calculates.

5 But, in fact, if the vehicle only traveled 75 of

6 those hundred feet at a deceleration rate of .31 and for

7 the rest of it at a deceleration rate of .1, it's going

8 to be a lower speed. Your initial speed is going to work

9 out to be a lower value. So that's why I'm saying their

10 error is going to be on the high side.

11 Q You mentioned that Mr. Ruegg told that you he was in

12 the ninth gear of his 13 speeds, correct?

13 A Right.

14 Q What is the RPM range in that gear?

15 A The same as any other gear.

16 Q So he could have been running at 2500 RPMs in that

17 gear?

18 A I don't think his engine can run that high. I think

19 he's governed out at 2,000. His preferred range is 1,800

20 to 2,000. That's what he told me. That's what I took it

21 as.

22 Q So you just accepted that at face value?

23 A I didn't imply that there is -- the only way I'd

24 know what speed the engine was running is what Mr. Ruegg

25 could tell me. I wasn't there. There was no photograph

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1 of the engine, so with what he said, this is how it works

2 out.

3 Q Is it possible he was running at 2,200 or 2,400 or

4 2,500 RPMs in that gear?

5 MR. CALLAS: Objection.

6 THE WITNESS: whatever that engine is governed

7 out at. I don't know that engine.

8 By Mr. Bachmann:

9 Q You're not saying it could happen, but you're not

10 saying it couldn't happen?

11 A If it's governed out at 2,000 and if the governor is

12 working, it can't run any faster than that.

13 Q But I mean the answer is you don't know?

14 A I don't know for certain.

15 Q How did you say under these conditions the HDVC had

16 a road speed of 39 to 43 miles per hour? Can you tell me

17 how you calculated that or can you show me.

18 A Yeah. I worked this all out myself before I

19 remembered that it's in Northwestern University's Traffic

20 Institute Traffic Accident Reconstruction Manual.

21 MR. CALLAS: Let's take just a two-minute

22 break.

23 (Thereupon, a recess was taken.)

24 (Thereupon, Davidson Exhibits I through T were

25 marked for purposes of identification.)

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1 By Mr. Bachmann:  
 2 Q Mr. Davidson, for convenience sake on your  
 3 notes so I can follow along, can we just mark I on the  
 4 top of yours?  
 5 A Yeah, go ahead. Sure. Circle it.  
 6 Q You've got in front of you what has been marked as  
 7 Davidson Exhibit I. You were about to tell me something  
 8 that you did with the calculations on Pages 3 and 4 of  
 9 that exhibit.  
 10 A Yeah, page 3 of that exhibit group that is dated  
 11 November of 1997.  
 12 Q On Page 3, tell me what you were going to tell me.  
 13 A This is the information that Mr. Ruegg gave me over  
 14 the phone. I transcribed it, because if you saw my  
 15 handwriting when I'm trying to take notes of a phone  
 16 conversation, if I don't transcribe it immediately, I  
 17 can't read them the next day. So I transcribed it.  
 18 It says 400 Cummins. That's the engine in the  
 19 tractor. The op range or operating range is 1,800 to  
 20 2,000 revolutions per minute.  
 21 Do you want me to read down through the whole  
 22 thing?  
 23 Q We were just going to go through the calculation.  
 24 A There is the equation the velocity of the  
 25 tractor/trailer in feet per second. The road speed of

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1 the rig in feet per second is equal to 0.00436 times the  
 2 range 1,800 to 2,000 divided by the -- I was using both  
 3 the ninth, tenth, and eleventh speed gear ratios, so it  
 4 was between 1.35 and 1.57 for the transmission ratio  
 5 times 3.7 which was the rear axle ratio times 42, which  
 6 is the free diameter of the drive tires. Your answer  
 7 comes out 50 that you see below.  
 8 If you use the 1.57 ratio, which is the actual ninth  
 9 gear of the 13 speeds on the box, you come out with a  
 10 road speed of 39 to 43 miles per hour.  
 11 Q What you've got here -- we've got 1,800 and 1.57  
 12 then 2,000 and 1.35. Those are the --  
 13 A Those are the different inputs that I used for the  
 14 equation. I put in 1,800 RPMs and the transmission ratio  
 15 of 1.57. Then I put in 2,000 and used 1.35 as the  
 16 ratio. Then I put in 1,800 and 1.35 is the transmission  
 17 ratio. Then I put in 2,000 RPMs and 1.57 is the ratio.  
 18 Q Why did you do it both ways?  
 19 A Mostly just for the hell of it.  
 20 Q Okay. Anything else?  
 21 A Ninth speed gear ratio is 1.57. The next one above  
 22 that is 1.35. Just for the heck of it I knew somebody  
 23 would ask me what if he was in tenth gear. I would have  
 24 to say that he was between 45 and 50 miles per hour if he  
 25 was in tenth gear.

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1 Q Tenth gear with the 1.35 ratio?  
 2 A Yes.  
 3 Q So that's where we get the 39 to 50 miles an hour?  
 4 A 45 to 50. It goes diagonally. Don't ask me why I  
 5 did it like that because I don't know.  
 6 Q So at 39 miles per hour, he's traveling 56.74 feet  
 7 per second?  
 8 A That's right.  
 9 Q Then --  
 10 A The output of this equation is in feet per second,  
 11 then you have to convert it to miles per hour.  
 12 Q So at the high end, if he's going 50 miles an hour  
 13 that was 73.32 feet per second?  
 14 A That's if he's in tenth gear at 2,000 engine RPMs.  
 15 Q At 45 miles an hour, he's going 66 feet per second?  
 16 A Yeah, that's 66 feet per second. The output of the  
 17 equation is in feet per second.  
 18 Q But regardless of what gear he's in at 45 miles an  
 19 hour, he's still going 66 feet per second?  
 20 A Him or anything else that is going 66 feet per  
 21 second, goes 45 miles an hour and vice versa.  
 22 Q So this is how you calculated the 39 to 43 miles per  
 23 hour?  
 24 A That's right.  
 25 Q This is all based upon the assumption that Mr. Ruegg

Page 44

1 was running 2,800 to 2,000 RPMs in ninth gear?  
 2 A 2,800 to 2,000?  
 3 Q 1,800 to 2,000.  
 4 A Right.  
 5 Q You said the HDVC at a road speed of 39 to 43 --  
 6 I'll withdraw that.  
 7 Are there any other assumptions in this calculation?  
 8 A No. That's it.  
 9 Q Okay.  
 10 Engine speed; transmission gear ratio; final drive  
 11 gear ratio; tire size. Then you said something occurring  
 12 on the next page.  
 13 A That's in case -- well mostly for my own  
 14 satisfaction, the constant 0.00436 is in the equation to  
 15 find the road speed from gear ratios and tire size. And  
 16 what that ratio represents it converts from inches to  
 17 feet. It converts the diameter of the tire to its  
 18 circumference and it does revolutions per minute to  
 19 revolutions per second to wind up with feet per second  
 20 for the velocity of the tractor/trailer.  
 21 It has a number to tell you where to find that  
 22 formula in the Traffic Accident Reconstruction Manual  
 23 from Northwestern University Traffic Institute.  
 24 Q Where was Mr. Ruegg at that point in the roadway?  
 25 Where was he located if he was going 39 to 43 miles an

Page 45

1 hour?

2 A Wherever he was on the road when he was running

3 1,800 to 2,000 RPMs in ninth gear.

4 Q Anywhere?

5 A He could have been 50 miles back. I don't know.

6 Q Are you saying this is the speed he was at when he

7 initiated braking?

8 A I believe that's his recollection. I'm just taking

9 that and saying this is what it works out to be.

10 Q Are you able, based upon the work that you've

11 done, to determine the speed he was going when he

12 initiated braking?

13 A No. In my opinion, nobody else can either.

14 Q Why couldn't you do it?

15 A Because we have no basis on which to estimate the

16 coefficient of friction between heavy-duty truck tires

17 and bituminous concrete pavement with excess tar on the

18 surface. There is simply no literature on experimental

19 results anywhere to guide us in that.

20 Q Assuming that -- this is just for the purpose of

21 this question. Assuming that there was no excess

22 bituminous tar on the pavement, could it be calculated?

23 A Yeah. It could be estimated with great difficulty,

24 but it could be estimated.

25 Q How?

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1 A You'd have to determine -- first you have to sort

2 out all the tire marks on the pavement. I'm not sure

3 that you can do that from what we have available. I

4 don't think you can do that, sort out which marks are

5 from Skidmore's truck and which marks are from Ruegg's

6 truck and which marks are from the van being pushed by

7 the truck. I'm not sure. I don't believe we can sort

8 them out now with what we have at hand. We would have to

9 note exactly where braking by the Ruegg rig initiated.

10 We would have to account for every foot from there

11 on. I don't mean to be that nasty about it. Within the

12 limits of field measurement, how much of that distance is

13 braking up to collision and how much after is braking and

14 how much is something else, whether it's tires in broad

15 slide or whatever that might be. You'd have to account

16 for all the distance and assign a reasonable value for

17 the drag factor for each different segment of travel,

18 then start doing the calculations back again the same way

19 with the van postcollision.

20 If you don't want to simply assume that the

21 departure velocity of the van is the same as the

22 departure velocity of the tractor/trailer from the

23 calculation, you have to work that out with the drag

24 factor. The distance of the transition and the center of

25 the mass of the car would be quite a complicated process.

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1 Q Is there a way to determine what the minimum speed

2 had to have been?

3 A No. Again, because -- are we still under your

4 assumption?

5 Q Yes, sir.

6 A We are still under your assumption. His minimum

7 speed? No.

8 Q Why not?

9 A Because we can't sort out those tire marks to assign

10 appropriate drag factors and everything else.

11 Q Let's say you could sort out the tire marks and

12 let's say you made an assumption that his tire marks

13 started at the point where the tires went left of

14 center.

15 A Which is Sgt. Veppert's assumption.

16 Q That's the basis for his analysis.

17 A He's assuming uniform skidding from there to final

18 rest with the collision in between. First of all, you

19 have to be able to separate precollision and

20 postcollision. You have to identify what is generally

21 called point of impact, the first contact where the

22 vehicles are along the roadway when they first come into

23 contact with each other. That is being assumed to be the

24 place where there is a scrape on the pavement. At least

25 that's what Sgt. Veppert indicates in his drawings.

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1 The fact is I don't know and I'm not sure anybody

2 else knows what made the scrape on the pavement. We

3 assume it's some part of the van, assuming that the

4 on-scene investigators recognized that as being related

5 to this accident and not to anything else and that it was

6 absolutely fresh. It was just absolutely a fresh mark,

7 what part of the van did it and in what moment of the

8 collision sequence did that mark get laid down?

9 If I may, I'll dig out a photograph and show you.

10 Maybe it's already in here. This is a perfect candidate

11 for a scrape on the pavement.

12 (Thereupon, Davidson Exhibit U was marked

13 for purposes of identification.)

14 By Mr. Bachmann:

15 Q Mr. Davidson, I'm handing you what has been marked

16 as Exhibit U.

17 A In the background of this photograph we have a view

18 of the left rear driver's side of the van that was

19 involved in the crash. We're looking back toward where

20 the tractor/trailer came from, looking away from the

21 railway crossing. If you look, you will see the bare rim

22 of the left rear wheel of the van on the pavement. The

23 tire has been peeled back off the rim. It's been what we

24 call debeaded, d-e-b-e-a-d-e-d. The bead has been

25 unbeaded from the rim. The bare rim is hanging out.

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1 This is a good candidate for a scrape on the pavement.  
2 On the other hand, if we look at other photographs of the  
3 car -- that one, for example. (Indicating.)

4 (Thereupon, Davidson Exhibit U was marked  
5 for purposes of identification.)

6 THE WITNESS: Exhibit V is the rear view of the  
7 van. We see the interior panel of the left gate  
8 hanging down. We see the exhaust system hanging  
9 down, but nothing really in contact with the road  
10 that is going to give us a good scrape mark.

11 Now the first hit of the tractor/trailer to the  
12 van, as best as I can make it out from the witness  
13 statements and the photographs and so forth, is the  
14 right front of the tractor hit heading toward the  
15 left rear of the van, which then accelerated the van  
16 forward, but then rotated it clockwise. It hit the  
17 tractor, hit the passenger's side of the van toward  
18 the rear again, which you can see in other  
19 photographs.

20 I can't see anything hanging down under the van  
21 that is going to make a mark or a scrape on the  
22 road. I can't in Exhibit V, but in Exhibit U I see  
23 a bare wheel rim.

24 By Mr. Bachmann:

25 Q Wouldn't you agree that on impact, when the Kull

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1 vehicle was rear-ended initially, that would be a  
2 tremendous downward force on the vehicle?

3 A No.

4 Q Why not?

5 A Why would there be a downward force?

6 Q I'm asking you why wouldn't there be.

7 A Well I'm saying I don't see any reason why there  
8 would be a downward force. The tractor didn't fall on  
9 it. It hit it from the back. If you look at the overall  
10 photos of the back of the van -- let me try to find one.

11 It pretty much looks like -- well, okay here.  
12 (Indicating.) Have that marked if you would. Wait.  
13 That, to me, looks like a pretty full height impact  
14 on -- I'm going to say the left third of the rear of the  
15 van all the way up to the roof line. I don't see any  
16 downward force. I don't see anything that would produce  
17 a download on the van. This would be like a full height  
18 moving barrier into the back of the van with about a 30  
19 percent overlap.

20 (Thereupon, Davidson Exhibit W was marked  
21 for purposes of identification.)

22 By Mr. Bachmann:

23 Q The last one you were referring to was Davidson  
24 Exhibit W, correct?

25 A Yes.

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1 (Thereupon, Davidson Exhibit X was marked  
2 for purposes of identification.)

3 By Mr. Bachmann:

4 Q Now I'll hand you what has been marked as Davidson  
5 Exhibit X. Between W and X, which part of the Ruegg  
6 tractor hit the rear of the Kull minivan?

7 A Well a good bit of it hit at various times or at  
8 least two impacts.

9 Q From the front of the tractor on X?

10 A Yeah.

11 Q Okay.

12 Show me while you're looking at it.

13 A There is part across the bumper. There is part more  
14 over toward the left side, the driver's side.  
15 (Indicating.)

16 Q So I guess I'm confused. So the Ruegg -- the front  
17 of Ruegg's truck rammed the Kull minivan twice in the  
18 back?

19 A That's the way I interpret that.

20 MR. CALLAS: Objection.

21 THE WITNESS: Again, this is my  
22 interpretation.

23 By Mr. Bachmann:

24 Q Let's clarify that a little bit. If you can, kind  
25 of just go through the sequence of how it hit.

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1 A It hit the rear of the van.

2 Q Okay.

3 A The tractor was coming down the road approaching the  
4 van and the rear of the van got hit. It looks like to me  
5 that the overlap was about one third on the left side of  
6 the van.

7 Q On the driver's side of the van?

8 A Yes, from the driver's side about a third of the way  
9 across the back. That's what it looks like.

10 Q Then you say he hit it again with the driver's  
11 side --

12 A Passenger's side rear of the van. Try that one.

13 Q I'm sorry. I thought you had said that -- in  
14 looking at Davidson Exhibit X, this is the front of the  
15 Ruegg truck, right?

16 A Yes.

17 Q I thought you said that the front of it had hit the  
18 rear of the minivan twice.

19 A No. It hit the rear once and then the right side  
20 rear the second time.

21 Q Then when it jackknifed --

22 A It bumped it still another time with the right rear  
23 tires of the tractor.

24 Q I am confused about the second hit. Can you explain  
25 that to me again, because there are three hits that you

Page 53

1 mentioned, right?

2 A There are two hits. The third one I don't know how

3 significant it was, but they wound up in contact.

4 Q The third hit being when the truck is fully

5 jackknifed?

6 A Fully jackknifed, the right rear of the tractor is

7 contacting the right side rear of the van.

8 Q The first hit with the impact on the left rear

9 driver's side of the minivan?

10 A Yes.

11 Q So where is the second hit?

12 A The right side rear of the van. Here it is.

13 (Indicating.)

14 Q So when the right side of the minivan was hit, the

15 passenger's side of the minivan was hit, that was the

16 front of the truck that hit it?

17 A Yeah. When the truck hits the back of the car and

18 it's an offset strike, the car will rotate. The van

19 rotated. The van -- well you see the van in the

20 pictures, such as Exhibit B. The van is cross-ways to

21 the road. It didn't start out cross-ways to the road.

22 It started out in line with the road. It was rotated by

23 the first impact. As it rotated, then it exposes its

24 passenger's side to the tractor, to the front of the

25 tractor.

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1 Q To the very front bumper of the tractor?

2 A Well to the front. You can see that the headlights

3 were knocked loose. I don't know whether they are broken

4 or not. There is minor damage to the grill.

5 Q On the driver's side?

6 A Yeah.

7 Q Then that's what caused the major damage to the side

8 of the minivan and to the passenger's side?

9 A Again, that's my interpretation. That's when this

10 side damage occurred.

11 Q Not from the back of the tractor rig?

12 A No. If you look at the back of the tractor, it's

13 not high enough to account for the damage higher up on

14 the minivan.

15 Q So if there was damage --

16 A There is damage up high on the minivan way above the

17 level of the bumper of the truck.

18 Q So if there was damage when it jackknifed, it would

19 have been minimal compared to the second impact?

20 A I don't know. I can't see. I can't see because the

21 second impact was definitely much higher than the right

22 rear corner of the frame of the tractor. That's why I

23 say there are really three impacts.

24 Q Actually you're not sure what took it to that point?

25 A You were asking about reconstruction and I was

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1 saying that Sgt. Veppert had assumed that scrape was from

2 the position on the strip of the roadway that was the

3 point of impact. I disagree. The point of impact was

4 further back than where that scrape is.

5 MR. CALLAS: why don't we say further north.

6 THE WITNESS: Further north than where that

7 scrape occurred. That scrape didn't occur until

8 later in the collision sequence. I think it was at

9 the second impact.

10 By Mr. Bachmann:

11 Q You are saying that because of a photograph of the

12 left rear on the driver's side tire?

13 A Right. The other photograph shows the rear of the

14 van. I don't see anything that could be driven or that

15 would be driven down on the pavement to make a scrape.

16 Now I have to say in honesty I don't know what that

17 scrape looked like. I don't know what shape it was. I

18 just know its location on the roadway from the accident

19 report.

20 Q Can you tell me in looking at Davidson Exhibit U,

21 the photograph, and particularly focusing on the left

22 rear passenger tire of the Kull minivan -- can you tell

23 me within a reasonable degree of scientific certainty

24 whether that tire caused the scrape on the road or not?

25 A No, I can't. All I can say is it's an exceptionally

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1 good candidate. That's my point. We've got so much

2 missing that it would obstruct any attempt to try to

3 reconstruct the accident.

4 Q Is it possible that Mr. Ruegg was going 45 miles an

5 hour?

6 MR. CALLAS: Objection. Anything is possible.

7 Go ahead.

8 THE WITNESS: Probably. I don't know how fast

9 he was going.

10 By Mr. Bachmann:

11 Q I mean --

12 A That's my point.

13 Q Can you tell me that it's any more likely that he

14 was going 39 to 43 miles an hour than if he was going 47

15 to 49 miles an hour?

16 MR. CALLAS: Objection. Go ahead.

17 THE WITNESS: No. My point is that nobody can

18 tell us how fast that van was going at the beginning

19 of the accident sequence from the physical

20 evidence. There are too many missing links. There

21 are just too many missing links.

22 By Mr. Bachmann:

23 Q Nobody including you?

24 A Including me. When I put down a number there, that

25 was a guesstimate. I hope I identified it as a

1 guesstimate.  
 2 Q This is on Davidson Exhibit A on Page 3 of 5, the 39  
 3 to 43 miles per hour. Can you say within a reasonable  
 4 degree of scientific certainty that Mr. Ruegg was going  
 5 39 to 43 miles per hour?  
 6 MR. CALLAS: Based upon what assumption?  
 7 Objection.  
 8 THE WITNESS: I can say to a high degree of  
 9 technical certainty that if Mr. Ruegg was driving  
 10 his 400 Cummins engine at 2,800 to 2,000 RPM in  
 11 ninth speed on a Fuller Road Ranger RTO 12513 and  
 12 that the drive axle tires on his truck were 11R22.5  
 13 and that his rear axle drive gear ratio is 3.701,  
 14 then, yes, he was going 39 to 43.  
 15 By Mr. Bachmann:  
 16 Q Using all those assumptions?  
 17 A I have to use those assumptions. I said under those  
 18 conditions, the vehicle would be traveling between 39 and  
 19 43. If you change those conditions, you change the  
 20 numbers.  
 21 Q Using your formula, the information that you have in  
 22 Davidson Exhibit A in the first paragraph there on Page 3  
 23 of 5, using your formula on Page 3 of Davidson Exhibit I  
 24 assuming he was going 45 miles an hour -- I'll withdraw  
 25 that.

1 You had mentioned -- I'll withdraw that.  
 2 Page 3 of Davidson Exhibit I, you have -- on the  
 3 bottom part of it, you've got the different assumptions  
 4 for ninth gear and tenth gear. What is the final drive  
 5 ratio?  
 6 A Where.  
 7 Q Like you've got 1,800 RPMs and 1.57, which is ninth  
 8 gear.  
 9 A I'm assuming that the rear end ratio and the final  
 10 drive ratio is 3.7021. That does not change. I'm only  
 11 changing the engine speed and whether it's in ninth gear  
 12 or tenth gear.  
 13 Q That 1.57 is the gear ratio?  
 14 A That's the ratio for ninth gear of the 13 speeds and  
 15 1.35 is the ratio for tenth speed. This is the overall  
 16 transmission ratio.  
 17 Q You've got a range of 1,800 to 2,000 RPMs. Maybe  
 18 this is a dumb question, but I frankly have no clue. Is  
 19 2,000 RPMs the maximum you could go on either of those  
 20 gears?  
 21 A The engine speed is independent of the gearing. On  
 22 a diesel, you want to run the engine within a fairly  
 23 narrow band of engine speed, because that is where it's  
 24 most efficient and most powerful. So you know if your  
 25 engine runs best at 1,800 to 2,000, that is why you have

1 13 gears, so you can gear down or gear up to adjust and  
 2 to keep your engine speed in that band and get the best  
 3 road speed you can get out of it. Whatever the speed  
 4 limit is or traffic conditions are, you should keep your  
 5 engine RPM in that range.  
 6 Q You said you didn't know if there was a governor to  
 7 limit it to that?  
 8 A I honestly forgot to ask him whether it's actually  
 9 governed or not. Many of the Cummins engines are. They  
 10 have a top-end limiter. They just won't run any faster.  
 11 Q So if he was going 45 miles an hour, then you would  
 12 have him in tenth gear, right?  
 13 A Assuming his engine is governed out at 2,000 RPMs,  
 14 yeah, because 2,000 RPM will only get him to 43.  
 15 Q What happens at 44?  
 16 A You gear up. When you drive alongside a diesel  
 17 engine, you hear it screaming. That's not the engine  
 18 that's screaming. That's the turbo charger that you hear  
 19 making that high whistling noise. The engine itself  
 20 sounds the same all the time pretty much. If you ride in  
 21 one, the guy is going up and down through the gears and  
 22 everything. The engine always sounds pretty much the  
 23 same. It's not like a gas engine as with your car where  
 24 the engine speed changes pretty widely.  
 25 Q Let's go to back to your report, Page 3 of that

1 which is Davidson Exhibit A. Go to the second full  
 2 paragraph, the biggest paragraph on the page. In the  
 3 last half you say: "The most authoritative source  
 4 available suggests that a total perception-response time  
 5 of 1.75 seconds would not be excessive, indeed, it might  
 6 reasonably be even longer. Allowing optimal air brake  
 7 system response time ("brake lag") of 0.5 seconds and a  
 8 drag factor (adjusted for the pavement surface and its  
 9 downgrade) of 0.20 it would take a total distance of 320  
 10 feet to bring the HDVC to a stop. Under Sgt. Veppert's  
 11 analysis the collision could not be avoided."  
 12 Do you see that?  
 13 A Yes.  
 14 Q What is the range of reaction time that you gave  
 15 Mr. Ruegg under these circumstances here?  
 16 A I would take 1.75 seconds because it's not an  
 17 absolutely simple discrimination. If you're driving down  
 18 the street and you're in the middle of the block and the  
 19 traffic light at the next corner turns red, you don't  
 20 have any problem. You just take your foot off the gas  
 21 and put it down on the brake. That takes about a second  
 22 and a half on an average. You can go to all kinds of  
 23 sources and they have got all kinds of numbers. The  
 24 consensus is that it's around a second and a half.  
 25 That's a very simple response and a very simple

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1 discrimination. The light is green. The light is red.  
 2 That's a very simple discrimination.  
 3 On the other hand, you come around the curve and you  
 4 see the rear end of a vehicle up ahead of you that you  
 5 didn't see before. What does that mean? You don't know  
 6 what it means. That's my point. You don't immediately  
 7 know what that means. If you're going 35 and you come  
 8 around the curve and now you see a vehicle in front of  
 9 you that you didn't see before, that vehicle could be  
 10 going 25 miles an hour and you're just slowly overtaking  
 11 it. You don't instantly know that the vehicle is stopped  
 12 in the way that you instantly know that the traffic  
 13 signal is red. So instead of a second and a half -- I'm  
 14 going to apologize to the court reporter.

15 When I was a boy scout so long ago that none of you  
 16 would even be here to think about it -- I don't want to  
 17 think about how long ago it was. We were taught to count  
 18 seconds. One thousand one, one thousand two, one  
 19 thousand three, one thousand four and so on. Okay?  
 20 You say it very quickly, but clearly. You can check  
 21 it against a stopwatch. Each syllable -- one thousand  
 22 one. Each of those syllables is a quarter of a second.  
 23 One thousand, that's half a second. One is a quarter of  
 24 a second with all the time tagging on until you see the  
 25 red light. You know what to do and you see the back of

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1 the car. You need to decide what to do. Is the car  
 2 stopped? Is it going 25? Should I just let off the  
 3 gas? Is it stopped? I'd better get on the brake. I am  
 4 only allowing one for that on top of the normal  
 5 perception response time. I don't think that's  
 6 unreasonable.

7 I'm sorry, does that answer the question?

8 Q So that's the --

9 A That's the basis for the 1.75 seconds  
 10 perception-response time for Mr. Ruegg.

11 Q You say -- I'll withdraw that.

12 You said it might reasonably be even longer. What  
 13 is the limit of reason there, two seconds or two and a  
 14 half?

15 A I don't know. I'm just saying that's the fastest I  
 16 can imagine that anybody can make that discrimination, a  
 17 vehicle stopped from a vehicle which is moving, at a  
 18 quarter of a second. I don't know how much longer it  
 19 might take.

20 Q Would two seconds be unreasonable?

21 A I wouldn't think it's completely beyond reason. I  
 22 don't know.

23 Q Would two and a half be unreasonable?

24 A We're talking around those recommendations? Is that  
 25 what we're talking about?

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1 Q I'm just asking you would that be unreasonable, two  
 2 and a half seconds?

3 A For an old geezer like me? Maybe not. I don't  
 4 know.

5 Q For Mr. Ruegg?

6 A I don't know.

7 Q You put it at 1.75.

8 A I put it at 1.75. I think that's the minimum. I  
 9 think that's at the low end. I want to be, you know, low  
 10 end.

11 Q Can you give me a high end?

12 A No.

13 Q Can you say that 2.5 is out of the range of  
 14 reasonableness or 2.75? I'm just trying to get a range.

15 A I don't know.

16 MR. CALLAS: Asked and answered. Go ahead.

17 THE WITNESS: I really wouldn't put an upper  
 18 limit on it.

19 By Mr. Bachmann:

20 Q Would you agree with me that --

21 A You know, at that moment -- let me just, for  
 22 example, say that at the moment that Mr. Ruegg is coming  
 23 around the curve and he's in the position where he could  
 24 see the rear end of the van, he might be looking down at  
 25 his speedometer or his engine temperature or any of the

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1 other things you are supposed to monitor while you're  
 2 driving. He might look at this for half a second and  
 3 then look up.

4 Do you see why I'm saying I can't tell you?

5 Q Would you agree with me that if his  
 6 perception-reaction time was 1.5 -- I'll withdraw that.

7 If it was 2 or 2.5, that would put him further north  
 8 and further back up the hill at the point at which he saw  
 9 the vehicle.

10 A Okay. I see what you are saying. At some point in  
 11 time, the brakes are applied and the tires start putting  
 12 marks on the road. We're working back from that. You  
 13 are saying, "Well however fast he was going for however  
 14 many seconds it took him to perceive and respond and then  
 15 go to the brakes, that's how many feet further north he  
 16 was when he saw the van and began to perceive it." Fine.

17 Q So if that perception-reaction time is -- the longer  
 18 that perception-reaction time is, the further north he is  
 19 when he first spots that vehicle, that Kull minivan?

20 A Yeah. That would follow -- you know, as long as you  
 21 can tell me how anybody knows that his  
 22 perception-reaction time was two seconds or two and a  
 23 half seconds. I don't know.

24 Q But I mean you agree with that statement, correct?

25 A Distance and time are a function of speed. If you

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1 take the speed and the time, you wind up with the  
 2 distance, okay? It's a mathematical equation, period.  
 3 Q The more time and the more distance he has --  
 4 A The higher the speed, the more distance you cover in  
 5 the same time or -- you know, any way you want to play  
 6 the game.  
 7 Q I'm not trying to play a game here.  
 8 A Any way you change the input to the equation, the  
 9 output changes. You give it more time at the same speed,  
 10 you get a longer distance. If you've got a higher speed  
 11 at the same time, you get a longer distance.  
 12 Q This is assuming the speed range that you have, 39  
 13 to 43, puts him further up the road then you've got a two  
 14 and a half second perception-reaction time?  
 15 A As opposed to 1.75?  
 16 Q Yes.  
 17 A Yes. That's simple mathematics. It's not reality,  
 18 but it's simple mathematics.  
 19 Q You say to allow the optimal air brake system  
 20 response time of .5 seconds. Where did you get that 5  
 21 seconds?  
 22 A That's generally what's taken in the field for  
 23 set-up time for brakes with optimal adjustment. The FFV  
 24 limit for it is 4.5 seconds. Brand new vehicles that  
 25 have never seen the road will often do quite a bit

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1 better. They have shorter set-up times.  
 2 Q That is added to the perception-response time?  
 3 A Yes. Perception-response time only comes up to the  
 4 point where Mr. Ruegg or any other driver slams the  
 5 treadle down. Then once he does that, all he has done is  
 6 open a pair of air valves. The air pressure has to then  
 7 build up in the system before the brakes actually apply.  
 8 It's not like your car which has hydraulic brakes. When  
 9 you start coming down on the pedal, those brakes start to  
 10 apply. There is no lag in a hydraulic system. In an air  
 11 system here, you put the treadle down, then you start to  
 12 feel the truck slow down.  
 13 Q You have a drag factor of .020 adjustment for  
 14 pavement surface downgrade. Can you explain how you got  
 15 that?  
 16 A Yeah. I'll tell you quite frankly that it's a WAG.  
 17 Q It's a what?  
 18 A Wild-ass guess. That's a term of art in traffic  
 19 accident reconstruction. Only you have a two-page paper  
 20 memo on excess tar that is headed Excess Tar. You have  
 21 four copies of it over there I think.  
 22 Q Is that what we are going to talk about next?  
 23 A Yeah, because you are asking me where I got that  
 24 drag factor. This is going to tell you something about  
 25 it.

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1 Q Let's find the memo.  
 2 A I thought it was underneath here. Try looking all  
 3 the way underneath. Several copies of it were floating  
 4 around.  
 5 (Thereupon, Davidson Exhibit Y was marked  
 6 for purposes of identification.)  
 7 By Mr. Bachmann:  
 8 Q I'm handing you what has been marked as Exhibit Y.  
 9 You were just getting ready to talk about excess tar, so  
 10 please continue.  
 11 A Well what I did was research the whole source. I  
 12 could find quite a bit. I could only find two references  
 13 for coefficient of friction bituminous concrete, that is  
 14 asphalt pavement with excess tar at the surface.  
 15 The first one is the old standard, which is  
 16 Jim Baker's research from way back when, which is  
 17 included in here called Traffic Accident Reconstruction  
 18 by Northwestern University Traffic Institute at Page  
 19 62-14. It gives coefficient of friction of this kind of  
 20 surface from speed. I forgot to include the speed in  
 21 excess of 30 miles per hour, initial speed in excess of  
 22 30 miles per hour of 0.35 to 0.60. These values are for  
 23 ordinary passenger cars and light truck tires. They are  
 24 not for heavy truck tires, okay? There is no information  
 25 anywhere that I can find that says what percentage of the

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1 passenger car values on this service you take for heavy  
 2 truck tires.  
 3 The only other reference I could find in the  
 4 literature is from a paper which refers to tests done in  
 5 1982 from initial speed of 40 miles per hour on  
 6 "Bituminous concrete, some asphalt bleed." ASTM skid  
 7 trailer tests were performed and it came up with a mean  
 8 skid number of 42, which means a drag factor of 0.42,  
 9 which is within the range, the low end of the range  
 10 offered by Baker and Fricke, although Baker really did  
 11 the work.  
 12 That citation was in the paper funded by the  
 13 Transportation Research Board and published by the  
 14 National Technical Information Service. I can find no  
 15 reports whatsoever of skidding heavy duty truck tires on  
 16 bituminous concrete pavement with excess tar at the  
 17 surface. I think that temperature variation probably has  
 18 more influence on this surface with truck tires versus  
 19 passenger tires than in other situations where  
 20 temperature variations are very small and meaningless.  
 21 Finally any attempt to estimate the dynamic  
 22 coefficient of friction of heavy-duty truck tires on a  
 23 bituminous concrete pavement with excess tar at the  
 24 surface is pure guesswork and unreliable for purposes of  
 25 traffic accident reconstruction. That is my position.

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1 Q Why are truck tires so different than passenger car  
2 tires?  
3 A They are a different rubber. The tread rubber on  
4 truck tires is much harder than on passenger car tires.  
5 On dry, ordinary surfaces, the conventional wisdom is to  
6 take 75 or 85 percent of the passenger car skid  
7 coefficient of friction for heavier trucks. That's the  
8 conventional wisdom.

9 On the other hand, there are plenty of studies.  
10 There are a number of studies. There are a number of  
11 actual skid tests and summaries of skid tests that show  
12 that it's at 60 percent. This was not a dry, ordinary  
13 surface, so I think that the conventional wisdom is  
14 highly suspect. I don't think -- it's the only reference  
15 I find where actual skid testing of heavy trucks is  
16 done. We're coming up with values that are 60 to 65  
17 percent of the passenger car values, not 75 to 85  
18 percent. So conventional wisdom is wrong in my  
19 judgement.

20 On ordinary surfaces, we've got references. We  
21 haven't got one, that I've been able to find, for  
22 skidding of heavy duty truck tires on an excessive tar  
23 surface. Not one single test. Then when you say what is  
24 the drag factor of a heavy truck tire on a surface with  
25 excess tar, there is no basis in fact for it. No basis

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1 whatsoever. We're all out in the cold. That's what I'm  
2 trying to say. We're all out in the cold on this.

3 Only by assuming a whole lot of things -- that  
4 aren't true in my judgement -- about this particular  
5 accident can we come up with what looks like a plausible  
6 reconstruction. This is not an attack on Sgt. Veppert.  
7 Please don't misunderstand me. He's doing the best job  
8 he can with what he's got to work on, but what he's got  
9 to work on can't be worked on with confidence.

10 Q This is because of the assumption of this tar  
11 problem on the road?

12 A Right. Take the .35 that Baker cites, okay? Now  
13 take 75 percent of it, then adjust for a 9 percent  
14 downgrade. You come up with 0.17. I said, "Well let's  
15 be ridiculous and make it simply 0.20."

16 Q So --

17 A That's as good a guess as anybody's.

18 Q That's a raw guess?

19 A That's a wild-ass guess. It's as good as anybody's  
20 on that pavement. Let's call a spade a spade.

21 Q How would this feel when you're walking it? Would  
22 it be tacky? Could it be loose?

23 A It might tend to be tacky. It depends on where  
24 you're walking.

25 Q Would it be noticeable to the average person walking

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1 on it?

2 A I don't know. I wasn't there and I don't know.

3 Q Would it be noticeable to an ODOT engineer or  
4 project superintendent who deals with asphalt?

5 A Who was there at the time of this accident?

6 Q Would that be noticeable?

7 A Are you telling me somebody was there?

8 Q I'm asking you would it be noticeable?

9 MR. CALLAS: Objection. Asked and answered.

10 THE WITNESS: I don't know. It depends on  
11 what he's paying attention to.

12 By Mr. Bachmann:

13 Q How long would this condition last?

14 A I don't know. I went through that before. I don't  
15 know.

16 Q Then continuing with Exhibit A on Page 3 on to Page  
17 4, you've got that one paragraph that starts with, "There  
18 is one further matter which I will address," then go on  
19 to the remainder of that paragraph on Page 4.

20 Without actually sitting down and running through  
21 the measurements themselves, can you tell me what it is  
22 you're trying to accomplish here? Take your time and  
23 read through it.

24 A What it all says is that there was a long string of  
25 traffic that no one else has accounted for. There are

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1 two vehicles missing from everyone elses' account except  
2 Abe Berry's. He was driving the rollback recovery  
3 truck. He said there were two vehicles in front of him  
4 north of the railroad crossing and he was 50 feet or so  
5 behind them, then you work it all out. It puts the back  
6 of the Aerostar 270 feet, I think, north of the --

7 Q Railroad crossing?

8 A -- railroad crossing, but that again, I think, is  
9 assuming that scrape mark is the point of impact. I  
10 think the Aerostar was further north than that 270 feet,  
11 but I can't tell you where.

12 Q I'm a little confused. With Mr. Berry having the  
13 two vehicles there and being 50 to 60 feet from those  
14 vehicles, that puts the rear end of the Aerostar at 270  
15 feet from the north rail of the railroad track.

16 A Yeah, if we assume -- I didn't make that entirely  
17 clear. If we assume that the scrape mark is where the  
18 rear of the Aerostar was when the collision occurred,  
19 that's quite a bit back from the intersection. There is  
20 a longer string of cars there because Mr. Ruegg said so  
21 and I simply accept that. Okay? That Aerostar was  
22 further back up into the curve than he had ever  
23 experienced before of cars backed up from the railroad  
24 crossing. In fact, there is not four cars but six cars,  
25 if you call a rollback wrecker a car in that string.

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1 Then there is some substantial distances between them.  
 2 They are not half a car length apart. Mrs. Kull says she  
 3 was two cars lengths behind and Mr. Berry says he was 50  
 4 feet behind the car in front of him. So you get a much  
 5 longer string than it would at first appear and his claim  
 6 then seems reasonable.

7 If it is so, then it could be a violation of his  
 8 expectancy of whether you might see a car backed up from  
 9 the railway crossing. He saw the back of the Aerostar.  
 10 It was too far back for that and it was confusing, which  
 11 violation of his expectancy would probably cause some  
 12 confusion in his mind in interpreting what that van in  
 13 front of him meant and would most probably lengthen his  
 14 perception-response time. That's what that exercise is  
 15 all about.

16 Q That's what these two paragraphs on Pages 3 and 4  
 17 are all about?

18 A Yeah.

19 Q As part of this, this is also assuming that -- just  
 20 so I'm clear -- that the rear of the minivan was 270 feet  
 21 from the north rail of the railroad tracks. Or am I  
 22 incorrect?

23 A That is where Mr. Daecher puts it. That's  
 24 approximately where Sgt. Veppert puts it. I think he  
 25 puts it even closer to the railway. As I said before,

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1 that's based on the assumption that the scrape on the  
 2 pavement is in the position of the rear of the van at  
 3 impact. I say no. The van was further to the north when  
 4 the impact occurred. The scrape occurred later in the  
 5 collision sequence. The van was more than 270 feet.

6 Q Then you do that just by simple mathematics? You  
 7 add that all up?

8 A You add that all up. It's got to be 270 feet at  
 9 least. It could be 300 feet.

10 Q How much does this add to this -- his violation of  
 11 expectancy, as you say, add to his perception-reaction  
 12 time?

13 A I don't know.

14 Q Can you give me a range?

15 A I don't think I could. I don't think the literature  
 16 encompasses if anyone is willing to stick their neck out  
 17 and say this is an appropriate range. It's pretty hard  
 18 to test that kind of thing.

19 Q If Mr. Ruegg was going 25 miles an hour going into  
 20 that left reverse curve, could he have stopped in time to  
 21 avoid the accident?

22 A What other assumption are you making?

23 Q Road conditions as you have described them and the  
 24 vehicle positions as you have described them.

25 A If he's going 25, does he get stopped before he

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1 collides?

2 Q Yes, sir.

3 A I don't know. It depends on his perception-reaction  
 4 time and --

5 Q 1.75 seconds.

6 A If you take him from the same point -- let's assume  
 7 for purposes of argument that he skidded 100 feet before  
 8 he hit the back of the van. I don't think he skidded  
 9 that far. So he's 100 feet from the van when the brakes  
 10 are applied. Then we go back a half second for the brake  
 11 applying time, system response time, then we go back 1.75  
 12 seconds. We do those two times at 25 miles per hour.  
 13 Then from 25 miles per hour, what does the drag factor  
 14 have to be for him to stop at 100 feet, becomes the  
 15 question. It remains the question. That's where the  
 16 brakes come on.

17 Do you want me to do the calculation --

18 Q Could you?

19 A -- and tell you what the drag factor has to be?

20 Q Is that something that you could do for me?

21 A I can do it with a calculator.

22 Q Okay.

23 A We're going to take his initial speed, the 25 miles  
 24 per hour times 1.4667, which gives his speed at 36.675  
 25 feet per second, squared, and divided by the quantity 2

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1 times the acceleration of gravity times 100 feet and .20  
 2 would have to be the drag factor to get the truck stopped  
 3 at 100 feet.

4 Q Okay.

5 A Does that answer your question?

6 Q Thank you.

7 In going back to Page 3 of Exhibit A, your report  
 8 this says that it took 320 feet to bring the vehicle to a  
 9 stop.

10 A Yes.

11 Q How many feet of perception-reaction distance are  
 12 you accounting for in that 320 feet?

13 A 35 miles per hour times 1.4667 is 51.33 feet per  
 14 second times 1.75 seconds is 0.8983537 feet. Let's call  
 15 it 90 feet. I couldn't resist.

16 Q That's at 35 miles an hour?

17 A Yeah. The faster you go, the longer that distance  
 18 becomes for the same time. The slower you go, the  
 19 shorter that distance becomes for the same time.

20 Q So the purpose of this paragraph is really to  
 21 destroy Sgt. Veppert's opinion with regard to the 35  
 22 miles an hour?

23 MR. CALLAS: Objection.

24 THE WITNESS: I wouldn't characterize it that  
 25 way. I would say I disagree with Sgt. Veppert. I

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1 don't think the drag factor is there. I think he's  
2 underestimating perception-response time and brake  
3 system response time.

4 By Mr. Bachmann:

5 Q Did you do any analysis of the skidmarks from the  
6 OH1 from the accident report?

7 A Did I draw them out --

8 Q Did you --

9 A -- to length or anything?

10 Q Yes.

11 A No. I had the same trouble that Sgt. Veppert did.  
12 I looked at those photographs. I really couldn't sort  
13 them out. I don't know which marks are from which  
14 truck.

15 There were some very funny things happening to  
16 Mr. Ruegg's tractor/trailer. There was some trailer hop,  
17 which I ascribe to -- because both Ruegg says so and  
18 Abe Berry says that he heard first the brakes, then the  
19 trailer hop. So he started braking then started  
20 hopping. I think that's attributable to those trailer  
21 hop skip skids in the beginning of the northern end of  
22 that pattern of tire marks, which are attributable to  
23 Ruegg's rig. But there are funny things going on with it  
24 afterwards. It was bouncing around the trailer and  
25 bouncing out, then coming back and doing this weird

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1 stuff. I can't really sort that out from the  
2 photographs.

3 Q At the speed of -- I'll withdraw that.

4 Assuming that you don't have this tar condition on  
5 the pavement, what would be the drag factor?

6 A For a heavy truck, somewhere between .45 and .6 for  
7 level road. I'd say, you know, adjusting for the 9  
8 percent or 8 percent downgrade -- I am not going to argue  
9 about one hundredth -- around .5, assuming that all the  
10 tires stay on the ground and are drawing the best they  
11 can. The best that the truck can go, assuming no excess  
12 tar, is .5.

13 Q Assuming the tires all stay on the ground at the end  
14 and at the beginning?

15 A All the way through that the tires stay on the  
16 ground. They have got to be down there all the way,  
17 though, for any assumption of drag factor to be valid.  
18 That's a problem in this analysis, because there are some  
19 very funny things happening. Once the impact occurs,  
20 which is further north than we think it is, there are  
21 funny things happening to Ruegg's rig. It's not just  
22 sitting on its wheels and skidding.

23 Q Those funny things are the trailer hop?

24 A Well at the very end you are getting that terrific  
25 bounce with the left side of the trailer up in the air

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1 and the right side bouncing on the ground. But before  
2 that, there are all kinds of perturbations in the tire  
3 marks that appear to be from Ruegg's tractor/trailer that  
4 suggest that it's rocking and rolling in response to the  
5 impact and steering inputs and what all.

6 Q Do you have any opinion on what effect, if any, the  
7 condition of Mr. Ruegg's brakes had on his ability to  
8 stop?

9 A I said in my opinion and under the circumstances  
10 which I see prevailing at the accident site at the time  
11 of the accident, no, they didn't have any effect. The  
12 best brakes in the world wouldn't have done him any  
13 better.

14 Q What if you take out the assumption of the tar?

15 A Then you have a whole different ball game in terms  
16 of drag factor. You still have the same problems about  
17 whose skidmarks are whose and where do they start and are  
18 they continuous and so on. But there is less of a  
19 problem because you could take and assume a low normal  
20 coefficient of drag and say, "Well this is the ball  
21 game," and probably not have to argue about it.

22 Q Did you do any analysis of the stopping ability of  
23 his brakes given the amount of wear or the amount that  
24 they are out of adjustment?

25 A Yeah. I did pretty much the same thing that

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1 Sgt. Veppert did and I don't have any disagreement with  
2 his N factor calculations.

3 Q So using the assumptions that he made, what he did  
4 was correct?

5 A His computation of the brake efficiency is fine.  
6 It's right straight down the line. No arguments.

7 Q Is there any evidence of panic braking?

8 A Yeah.

9 Q Where do you see that? Can you show me where or how  
10 you know that.

11 A Trailer hop. You only get that when you brake hard.

12 Q Was there any evidence that you could find of  
13 Mr. Ruegg's steering or attempting to steer to the right?

14 A I can't be sure, because it's hard to unscramble  
15 those tire marks. I'm not absolutely certain.

16 Q As he's coming around that turn and given the speed  
17 that you have him going at 39 to 43 miles an hour, where  
18 would the momentum tend to take him? Straight, left or  
19 right?

20 A Momentum always acts straight ahead, okay? If  
21 you're traversing a curve, your instantaneous velocity  
22 and your instantaneous momentum is always tangent to the  
23 curve at that point. So that if your tires do not have  
24 adequate frictional side force, you will go out tangent  
25 to the curve at that point, which means that you run out

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1 of the curve. You go straight in and the curve keeps  
 2 going around.  
 3 Q Is there any evidence that Mr. Ruegg's truck was  
 4 just -- I'll withdraw that.  
 5 Let's go back to Exhibit I, if we could. Page 1 is  
 6 just your remarks of what the photographs look like.  
 7 A Yeah.  
 8 Q How about Page 2? What's that? Is that the number  
 9 for the gearing?  
 10 A That's the gear ratio.  
 11 Q What's the 0.87?  
 12 A That's what Fuller would call ninth gear. But if  
 13 you read down the column on the right, they have  
 14 different names. They don't just start one, two, three,  
 15 four, five, six, seven, eight, nine. They say low,  
 16 first, second, third, fourth, fifth, fifth overdrive,  
 17 sixth, sixth overdrive, seventh, seventh overdrive,  
 18 eighth, eighth overdrive to ninth. That's the way they  
 19 call them. The 0.87 is the ratio in what Fuller would  
 20 call ninth gear, but what Fuller calls ninth gear and  
 21 what a truck driver calls ninth gear out of 13 -- if you  
 22 count down 13, you know, don't count low gear. You've  
 23 got 13 speeds above that ninth gear, the 0.87. That's 60  
 24 miles an hour. That's out of sight. That's not even  
 25 reasonable. So just counting up from the bottom the way

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1 a trucker would, ninth gear is 1.57.  
 2 Q The next one I have is marked Davidson Exhibit J.  
 3 At the top it says COLM.  
 4 A Convolution of linear momentum. That's what that  
 5 stands for. I was looking at the form of the equation  
 6 that Sgt. Veppert was using in his report. I was not  
 7 familiar with it. It took me a while to figure out what  
 8 the 31.05 represented, because he didn't say where it  
 9 came from.  
 10 Q Did you figure it out?  
 11 A Yeah. It's double V for the van.  
 12 Q So do you have any qualms or problems with  
 13 Sgt. Veppert's calculation?  
 14 A I disagree with the drag factor values, but then in  
 15 this convolution of linear momentum analysis, he's got  
 16 the weight of the tractor/trailer. The curve weight of  
 17 the tractor/trailer is 27,380. When the load slips, it's  
 18 29,000-something. I come up with a different weight for  
 19 the van, but it doesn't matter. The difference is  
 20 insignificant.  
 21 Q The next is Exhibit K, which is correspondence from  
 22 Mr. Soles.  
 23 A Yeah.  
 24 Q Any other criticisms that you had of  
 25 Sgt. Veppert's report?

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1 MR. CALLAS: Objection.  
 2 THE WITNESS: It's basically what I have been  
 3 talking about. The assumption of where the point of  
 4 impact was and what are we using for drag factor and  
 5 the assumption of when that drag factor is acting  
 6 and those kind of characterizations. I have  
 7 differences of opinion with Sgt. Veppert.  
 8 By Mr. Bachmann:  
 9 Q The next page on Exhibit K here looks like you  
 10 received a copy of Larry Sutherland's report.  
 11 Do you have any criticisms of his report?  
 12 MR. CALLAS: Objection.  
 13 THE WITNESS: The same thing. I think he's  
 14 assuming a drag factor that I don't think exists.  
 15 Any comments about the tread depths of the  
 16 tires -- I don't know what possible bearing that has  
 17 on this accident. I don't know what possible  
 18 bearing it has on it.  
 19 He makes some comment about economic  
 20 involvement in this accident, about people who  
 21 aren't -- who don't stand to gain from it.  
 22 Everybody should see that that guy is guilty as sin  
 23 and that sounds to me like Judge Lynch. "He looks  
 24 guilty, take him out and hang him. Let's not waste  
 25 time investigating this. Just take him out and hang

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1 him. He's a likely candidate and be done with it."  
 2 I don't think that has any place in a professional  
 3 report. I'm very surprised frankly.  
 4 I think Mr. Sutherland is leaning a little too  
 5 hard on the curve advisory speeds for safety.  
 6 AASHTO -- the last time I looked to AASHTO's  
 7 recommendation for curve speed was to essentially  
 8 limit lateral acceleration experience by the  
 9 occupants of the vehicle to .16G or less. That  
 10 means that for this curve, if that's the criteria  
 11 they were using in that curve for 35 miles an hour,  
 12 it has a radius of 482 feet. If the actual drag  
 13 factor of the pavement was as low as .35, excess tar  
 14 of .35, you go around that curve at 50 miles an  
 15 hour. If it was 0.20, you could go around that  
 16 curve at 38 miles an hour.  
 17 By Mr. Bachmann:  
 18 Q Assuming that is what you are referring to. That  
 19 would be exhibit T?  
 20 A Exhibit T it is.  
 21 Q It's a two-page exhibit? I've got it as a two-page  
 22 exhibit.  
 23 A The second page is a calculation of the relationship  
 24 between passenger car and heavy truck tire drag factor on  
 25 dry pavement with a skid number of 80 at the Vehicle

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1 Research and Test Center in East Liberty, Ohio. The  
 2 truck values were coming up as -- the unloaded trucks  
 3 were coming up at 60 percent of the passenger car values,  
 4 not 75 percent, not 85 percent. It was 60 percent.  
 5 Q Where is this coming from? Is it on one of the  
 6 exhibits?  
 7 A You've got it there somewhere. It's the one with  
 8 the chart on top. It's the second thing in there, I  
 9 believe.  
 10 Q Second page of Exhibit S?  
 11 A Yes.  
 12 Q This comes from where?  
 13 A This is a summary of skid testing that was done by  
 14 NHTSA, National Highway Traffic Safety Administration at  
 15 the Vehicle Research -- is it Vehicle Research and Test  
 16 Center or Vehicle Test and Research Center? I can't  
 17 remember which way it goes. It's right out here in East  
 18 Liberty, Ohio. The work was done under the direction of  
 19 Richard Radlinski, R-a-d-l-i-n-s-k-i.  
 20 Those are the results from the empty  
 21 tractor/trailer, from panic locked wheels stopping on dry  
 22 pavement. The skid pad out there is a skid number of 80,  
 23 which means it was maximum coefficient of friction of  
 24 .80. Cars were coming up with .75 drag factor. .75 is  
 25 pretty close to .80 and then enclosed tractor/trailers

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1 were coming up with .48, which was 68 percent of the  
 2 passenger car value.  
 3 Q I thought you told me it was between .5 and .6  
 4 before?  
 5 A The drag factor -- the best pull is between .5 and  
 6 .6. They just won't go any higher. On this surface  
 7 what they got was .48, which is just under .5.  
 8 Q What's the surface again they are using?  
 9 A Dry asphalt with a maximum 1 percent and a slope  
 10 skid number of 80 means it is a coefficient of friction  
 11 of .80.  
 12 Q Let's go back to the first page of T.  
 13 A Okay. That's critical speed in the curve.  
 14 Q You were mentioning a whole bunch of stuff about  
 15 that and frankly I don't understand what you were  
 16 saying.  
 17 A Given a curve on a highway and a certain pavement,  
 18 that highway and that curve have a certain radius, all  
 19 right? There is a limit to the speed at which you can go  
 20 around, just as we were talking about before. If you  
 21 exceed that speed, you slide out of the curve. The  
 22 critical speed is that threshold between following the  
 23 curve and sliding out of the curve. If the curve in this  
 24 accident site is posted for 35 miles an hour advisory and  
 25 if it was posted in accordance with the AASHTO

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1 recommendation, the lateral acceleration not exceeding  
 2 0.17G, which means the drag factor has to be 0.17 or the  
 3 car will slide out. If you take the 35 miles per hour  
 4 speed and 0.17 drag factor, you can solve the radius of  
 5 the curve. It comes up to be 482 feet.  
 6 Now if you take a curve with that radius of 482 feet  
 7 and say that the pavement has a drag factor of .35, it's  
 8 got excess tar. It's only got a drag factor of .35. How  
 9 fast would you go around that curve that would be just on  
 10 the threshold between following the curve or sliding out  
 11 of the curve. The answer is 50 miles per hour.  
 12 Then I asked myself, "Well if the drag factor is  
 13 0.20, what speed can you go around the curve?" The  
 14 answer is 38 miles an hour.  
 15 So if that curve has -- if the pavement has excess  
 16 tar and for passenger car it's only got a drag factor of  
 17 .35 we're just not including any superelevation, because  
 18 I don't know anything about it. That car could go around  
 19 that curve at 50 miles an hour. If I assume -- I go back  
 20 to my WAG about the drag factor for heavy truck and say  
 21 it's .20, the truck could go around the curve at 38 miles  
 22 an hour with no difficulty. It wouldn't slide out of the  
 23 curve.  
 24 Q So the 35 mile an hour advisory speed is a good  
 25 advisory speed?

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1 A It's an advisory speed. It's based upon a comfort  
 2 criteria.  
 3 Q So you have no problem with the advisory speed of  
 4 that curve?  
 5 A It's not a speed limit. It's an advisory speed  
 6 limit and I don't have any problem with it being an  
 7 advisory.  
 8 Q You think it should be lower?  
 9 A I think we need different advisory speeds for  
 10 different conditions.  
 11 Q What do you think we needed for this condition?  
 12 A Twenty.  
 13 Q Twenty?  
 14 A For excess tar on the surface maybe it would be  
 15 better to be down to 20. I don't know.  
 16 Q Is that just a WAG?  
 17 A That's a WAG. At .35 for excess tar you can go  
 18 around that curve at 50 miles an hour, but I don't think  
 19 that's reasonable. I don't think that's sensible.  
 20 Q Have you been out to the accident scene?  
 21 A No, I haven't.  
 22 Q You have never driven it?  
 23 A No.  
 24 Q Any other criticisms of Sutherland's report?  
 25 MR. CALLAS: Objection.

1 THE WITNESS: He makes statements about the  
 2 surface as it existed at the time of the accident.  
 3 He wasn't there any more than any of the rest of us  
 4 were there. I don't see what basis he has for  
 5 making that. My objection is that he offers a  
 6 statement of fact rather than in his opinion.  
 7 By Mr. Bachmann:  
 8 Q Exhibit L.  
 9 A Yes.  
 10 Q Can you tell me what this is, please.  
 11 A Well on one page of it in the diagram of his  
 12 original report that was sent to me, Sgt. Veppert showed  
 13 the postcollision travel of the tractor/trailer as 75  
 14 feet on the first page. He did calculations. He assumed  
 15 103 feet for the distance. I'm saying which one is it?  
 16 Q Where did it come from is what you are asking?  
 17 A Which one is right? Why have we got a difference?  
 18 There is some confusion because Sgt. Veppert is -- well  
 19 it's just not like him to make that kind of difference.  
 20 Then it's followed by a statement of mine that they must  
 21 be for the center of mass and preferably for all three  
 22 vehicles combined after the crash. But then I see that  
 23 there is this separation of the van after the crash. I  
 24 don't know how the heck you deal with that.  
 25 After reviewing it further I agree with Sgt. Veppert

1 that you could do the postcollision analysis axle by  
 2 axle. Again you are assuming the drag factor of each  
 3 one. Well the distance they travel -- and I haven't seen  
 4 what he did with that analysis, so I'm not sure whether I  
 5 would accept it or not. I think he's probably using too  
 6 much of a drag factor in my judgement. Then Point E on  
 7 the table of coordinate measurements attached to what  
 8 Sgt. Butts prepared goes with the accident report scrape  
 9 mark on pavement, then he put it in editorial brackets as  
 10 POI. It's being assumed that that is the POI. That's  
 11 500 feet and 9 inches from the original -- from zero.  
 12 That assumption is added to our alignment of  
 13 tractor/trailer at impact. Well Sgt. Veppert is assuming  
 14 that they are aligned. I'm not entirely sure that's  
 15 correct.  
 16 How do I identify center of mass at impact, at final  
 17 position, or combined vehicles after the crash including  
 18 the van? I just said that's probably not necessary.  
 19 Then the last sentence says, "Does not address trailer  
 20 hop or brake release," and we've talked about that  
 21 before.  
 22 Q Exhibit M has Daecher on top.  
 23 A Yes.  
 24 Q This is your analysis of the questions you have of  
 25 Daecher's report?

1 A Yeah. Those are questions that I had. I have a lot  
 2 of arguments with what his analysis assumes. For one  
 3 thing, it assumes the same coefficient of friction as  
 4 Sgt. Veppert of 0.69, then corrects for the gradient of  
 5 .600.600. He makes no adjustment for brake adjustment,  
 6 for brake efficiency, which Sgt. Veppert did do, but he  
 7 doesn't.  
 8 He assumes that you have the skidmarks at 200 feet  
 9 of tire marks that represent locked wheel skidding by the  
 10 truck tractor/trailer, not truck tractor/trailer over the  
 11 entire distance. He doesn't make any other  
 12 discrimination, so he comes up with a nonsense value for  
 13 the initial speed of the vehicle.  
 14 Q Down below it says Julian.  
 15 A Julian date. The 24th of 1996 was the 268th day of  
 16 that year. I was just curious to see how long after the  
 17 accident he had been to the accident site and it turns  
 18 out to be 104 days. That's Daecher. I don't know when  
 19 Sgt. Veppert was brought into it.  
 20 Q Let's go to Exhibit N, which is -- it says drag  
 21 factor on top. It's a two-page exhibit.  
 22 Can you tell me what these two pages are.  
 23 A Yeah. That's playing around with the idea of what  
 24 kind of drag factor, assuming there is excess tar on the  
 25 surface -- which is my position in this matter -- that

1 it's dry and that the initial speed is greater than 35  
 2 miles per hour. The range of values given by Baker and  
 3 taken up by Fricke is 0.35 to 0.60. Do we take 75  
 4 percent of it? That would be .26 to .25. Do we take 85  
 5 percent which would be .30 to .51? We subtract the  
 6 gradient and that leaves us with a range of drag factor  
 7 from .17 to .42. The center of range is about .27.  
 8 Q Where do you get the 75 percent and the 85 percent?  
 9 A That's the wisdom. That's what Guiser taught.  
 10 Q That's standard in the industry?  
 11 A No. That's what they are taught at school. My  
 12 position is that that is not valid.  
 13 Q What assumptions are made in the 74 percent and 85  
 14 percent?  
 15 A That truck tires are going to pull 85 percent or 75  
 16 percent of whatever the passenger car will do on that  
 17 surface.  
 18 Q Why 75 percent and why 85 percent?  
 19 A I'm not sure where the numbers come from except that  
 20 Ken Baker says so in his section on heavy truck accident  
 21 reconstruction in that Traffic Accident Reconstruction  
 22 Manual, but when you go to the skid test results in the  
 23 literature, they don't come up to 75 percent. There is  
 24 one where they do and that is the State of Washington.  
 25 But they've got a real funny drag factor, a real low one

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1 for their test car on the pavement. They have .7 for a  
 2 car. That's very low. Ordinary city street and country  
 3 road asphalt or highways -- anywhere there is a passenger  
 4 car is going to pull .75 or .75 to .78.  
 5 Q It's surprising to see anything a great deal higher  
 6 or a great deal lower?  
 7 A .70 is awfully low.  
 8 Q What is the second page of this?  
 9 A The second page of it was the calculated stopping  
 10 distance from 35 miles per hour and allowing perception  
 11 time and response time. That's time for perception and  
 12 response of 1.75 seconds. The distance traveled at 35  
 13 miles per hour while you're perceiving and responding for  
 14 1.75 seconds is 90 feet. We've been through that  
 15 before. You take the time for the brake system  
 16 response. It's half a second. How far is that at 35  
 17 miles an hour? It's 26 feet. So you have a total  
 18 distance before the brake is applied of 116 feet.  
 19 Then assuming a drag factor of .20, how far will the  
 20 vehicle travel while it's skidding to a stop. Assuming  
 21 all the tires on the ground are skidding all the time  
 22 from start to finish, it is 205 feet, which makes a total  
 23 of 321 feet. If I say that the drag factor is .37 and  
 24 hold all the other time figures the same and the initial  
 25 speed the same, the total distance is 268 feet.

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1 Q Okay.  
 2 Is that .27 also a WAG?  
 3 A That's taken from the middle of the range. When you  
 4 take 75 to 85 percent of Baker's numbers for a  
 5 coefficient of friction then subtract for 99 percent  
 6 downgrade, the middle of that range is .27.  
 7 Q Is that just as much of a wild-ass guess as the .20?  
 8 A Absolutely. We have absolutely not one single thing  
 9 on this to rely on to tell us what to do with a heavy  
 10 truck tire sliding on excess tar. Not one single test.  
 11 Q Exhibit O is your criticism of Larry Sutherland's  
 12 report.  
 13 A What exhibit is that, sir?  
 14 Q Exhibit O are your criticisms of Larry Sutherland's  
 15 report, correct?  
 16 A Well it becomes a criticism, yeah. I disagree with  
 17 some of the things that he's done.  
 18 Q Exhibit P is the three page --  
 19 A I was just trying to compare the input Mr. Daecher  
 20 was using to the input Sgt. Veppert was using.  
 21 Q Okay.  
 22 A Then some notes about the photographs showing the  
 23 excess tar on the tire treads.  
 24 Q No test data?  
 25 A No test data for trucks on that surface.

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1 MR. CALLAS: Let's stop for a second. That  
 2 article speaks for itself.  
 3 By Mr. Bachmann:  
 4 Q How does the Exhibit Q play into your analysis  
 5 without going through it all?  
 6 A It's just information about what AASHTO  
 7 recommendations are for setting advisory speeds on  
 8 curves.  
 9 Q And R?  
 10 A That was from Mr. Soles because Sgt. Veppert is  
 11 using some form of a motion equation that involves  
 12 constants and Mr. Sutherland also used the form of the  
 13 equation that has a beginning constant in it. I thought  
 14 it was important for Mr. Soles to go through the equation  
 15 for himself. The weight doesn't matter. The weight is  
 16 not a factor. It is not considered a factor. It drops  
 17 out of the equation, what those constants mean, what they  
 18 represent.  
 19 Q Exhibits S?  
 20 A Those are copies of some charts from some of the  
 21 Radlinski papers. On the first one I've drawn in the  
 22 values, the percent efficiency of different strokes,  
 23 chamber strokes. That's what I used for my analysis.  
 24 Q Chamber strokes of the brakes?  
 25 A Yeah, the brake chamber strokes.

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1 The next one is that panic stopping from 30 miles  
 2 per hour on a coefficient of friction of .80.  
 3 Q What was the purpose of this document?  
 4 A It's one of the Radlinski papers. I don't remember  
 5 which it is one off the top of my head. That brake  
 6 chamber is out of a Mack Service Manual. Page 3, that's  
 7 another copy of that same chart from the Radlinski.  
 8 There is another copy of the Mack Brake chamber size,  
 9 then there are two copies that control skid from 60 miles  
 10 an hour, but that's not from Mack and that's not locked  
 11 wheel skidding. That's maintaining directional control  
 12 since modulated braking, what we call modulated braking.  
 13 Q Heavy braking?  
 14 A It's modulated. You don't let the wheels lock up  
 15 for skid control. It's modulated. You try to keep it  
 16 just under lock-up. It's very tricky.  
 17 The last is the title page from the issue of  
 18 Accident Reconstruction Journal or is it accident  
 19 reconstruction. There is an article by a  
 20 reconstructionist who's saying if you had the measurement  
 21 of a trailer skip skid, you could say what the speed of  
 22 the vehicle was when it laid down those skip skids to  
 23 trailer hop marks. But, of course, we don't have them so  
 24 we can't try that.  
 25 Q This afternoon you had to wait a while around

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1 in Mr. Soles' and Mr. Callas' offices here. Other than  
 2 reading the newspaper you brought with you, what did you  
 3 examine?  
 4 A I looked at the prints of the photographs of the  
 5 accident scene that Sgt. Veppert had with him.  
 6 Q Okay.  
 7 And did you have a chance to look at his drawings?  
 8 A Yeah, I did.  
 9 Q What analysis did you perform on those?  
 10 A I didn't do any analysis. I just sat there and  
 11 admired them.  
 12 Q No criticisms?  
 13 A Yeah. Again, I don't think that the position of the  
 14 scrape on the road accords with the point of impact. I  
 15 think the point of impact is further north than the  
 16 scrape mark, so I do disagree with precrash and postcrash  
 17 travel distance. I disagree with Sgt. Veppert about  
 18 where the point of impact is.  
 19 Q What if it was there? How would that change your  
 20 analysis?  
 21 A It wouldn't change my analysis really at all, but I  
 22 don't think it's there.  
 23 Q You said that you had looked at Sgt. Veppert's  
 24 expanded report.  
 25 A I just got a copy of it.

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1 Q What did you --  
 2 A I didn't have a chance to go through it. I got it  
 3 late enough that I did not have a chance to even look  
 4 through it. I see it's expanded and he's trying to  
 5 explain in more detail how he did things.  
 6 Q Did you view that as a change in his opinion or just  
 7 a further elaboration of his analysis?  
 8 MR. CALLAS: Objection.  
 9 THE WITNESS: In my judgement, it's an element  
 10 of his methodology. I don't think there is any  
 11 change.  
 12 By Mr. Bachmann:  
 13 Q What about his notes?  
 14 A Again I haven't gone through them. One set is the  
 15 total station printouts for the drawing. It's a  
 16 computerized surveying system that produces the drawings  
 17 that I envy.  
 18 Q You wish you had the total station?  
 19 A Yeah, I wish I had it.  
 20 Q Do you use an accelerometer at all?  
 21 A I have a VC 2,000 Vericomt, V-e-r-i-c-o-m-t.  
 22 Q Did you perform any sort of skid testing using an  
 23 accelerometer?  
 24 A With relation to this case?  
 25 Q Yes, sir.

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1 A No.  
 2 Q Are there any other assumptions that you have made  
 3 in coming to the conclusions set forth in Davidson  
 4 Exhibit A?  
 5 MR. CALLAS: Objection.  
 6 THE WITNESS: You mean any assumptions other  
 7 than the ones that we have discussed at length here  
 8 this evening?  
 9 By Mr. Bachmann:  
 10 Q Yes, sir.  
 11 A I don't really think so. I think I have articulated  
 12 everything.  
 13 Q You had mentioned something about Mr. Berry's  
 14 statement. What statement were you referring to?  
 15 A The one that is attached to the police report.  
 16 Q Had you seen any other statement made by Mr. Berry?  
 17 A No.  
 18 Q In your opinion, what was the cause of this  
 19 accident?  
 20 A What was the cause of the accident? The vehicles  
 21 were there. I don't know. All I'm saying is that the  
 22 status of the brake adjustment had nothing to with it.  
 23 It was not a cause. The speed could not be determined by  
 24 reconstruction and there is no pervasive evidence that  
 25 the speed of the truck was higher than is reasonable.

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1 That's basically what I'm saying.  
 2 Q You went to Carnegie Institute of Technology for two  
 3 years?  
 4 A A year and a half.  
 5 Q Then what happened between 1951 and 1961?  
 6 A I worked.  
 7 Q Where did you work?  
 8 A I started working in a garage in 1952. I worked in  
 9 a machine shop before that. I started working in the  
 10 garage around 1952, and then for 1955 and 1956 I was in  
 11 Philadelphia doing alternative service work as a  
 12 warehouseman and driver. Then I went back to become a  
 13 mechanic. It's all in the resume in painful detail.  
 14 Q The question I had is if you got your Master's in  
 15 history -- which there is nothing odd about that. That's  
 16 wonderful.  
 17 A How does it apply to traffic accident  
 18 reconstruction?  
 19 Q Yes.  
 20 A Every one of them is a historical reconstruction  
 21 that happened in the past. We weren't there, but another  
 22 different body of data was. The rigorous logic has to be  
 23 the same or just as rigorous.  
 24 Q But was that just something you did out of  
 25 intellectual interest?

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1 A I was always trying to figure out what I was going  
2 to be when I grew up. I think more to the point of this  
3 is Page 3, which are certifications as a master  
4 automobile technician, as a truck technician, as a master  
5 heavy-duty truck technician, and as a traffic accident  
6 reconstructionist.  
7 Q In 1972 that looks like that's really the first time  
8 when you start -- what were you doing in 1972? Were you  
9 an automotive investigator for the Bureau of Consumer  
10 Affairs?  
11 A Yeah, that's what I was doing. I was doing  
12 consulting work in forensic automotive mechanics on a  
13 part-time basis.  
14 Q Can you tell me what you were? I'm not really sure  
15 what it was you were doing.  
16 A You mean my full-time job?  
17 Q You said you received several newspaper reports,  
18 articles, and journals. Did this have anything to do  
19 with what you are doing today?  
20 A It had to do with motor vehicles, yes. I had to  
21 occasionally go out to examine vehicles and determine  
22 what the problems were and then try to get them resolved.  
23 Q So --  
24 A It was not traffic accident reconstruction, if  
25 that's what you're asking.

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1 Q At what point did you get involved in accident  
2 reconstruction?  
3 A The first case I ever worked on was in 1969. It  
4 wasn't a traffic accident on the highway. It was an  
5 accident at a loading dock, but it required the same kind  
6 of analysis. What happened and why. Who shot John.  
7 Q In your resume here you have repair technician,  
8 entertainment electronics, and small appliances from 1967  
9 to 1972. I'm just trying to figure out --  
10 A Well if you go to the next page you'll see that from  
11 1967 to 1977 I was engaged part time as a consultant in  
12 forensic auto mechanics.  
13 In 1977 I transferred to that as my full-time  
14 occupation, which has been since that time.  
15 Q From 1969 to 1977, was that just doing that on your  
16 own or with somebody else?  
17 A I have always been on my own. I had a helper for a  
18 while, but that didn't work out.  
19 Q So in 1969, you started doing accident  
20 reconstruction?  
21 A Essentially, yes. I didn't realize it at that time,  
22 but that's what it was. I did it from time to time from  
23 that time on and bought some books and studied them and  
24 so forth. Then in -- I think 1986 I took my first formal  
25 course in traffic accident reconstruction. It was a

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1 short course with the Kent State University taught by  
2 Dr. Uhrich, then went on from there.  
3 Q Can you give me names of some of these prosecutors  
4 that you have worked with in the past several years, the  
5 ones that are still in that business?  
6 A I'd have to go back to the files and try to pull the  
7 names. I don't remember off the top of my head.  
8 Q Are there any insurance carriers that you work with  
9 on a regular basis?  
10 A No. They call me when they want me, State Farm or  
11 American States or who knows what. I'm doing one for  
12 Erie Insurance Group right now. I haven't done any work  
13 for them for several years.  
14 Q In terms of -- and pardon me. I haven't studied  
15 your resume. It's very lengthy in terms of accident  
16 investigation.  
17 Do you have any training, background, and education  
18 in that?  
19 A Yeah.  
20 Q Can you tell me where and when.  
21 A I took some courses from Northwestern in measuring  
22 at the site of traffic accidents, mostly so I could  
23 understand what the police officers were doing in their  
24 reports, what their numbers meant.  
25 I basically did it well and satisfied Northwestern

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1 that I was ready to take traffic accident reconstruction  
2 and that I didn't have to go back to square one and start  
3 with traffic accident investigation, because I had been  
4 doing it for a number of years.  
5 Q Are you a tool maker?  
6 A Am I a tool maker?  
7 Q Yes, sir.  
8 A Not in any professional sense. I used to make a lot  
9 of stuff when I worked on the line as a mechanic and made  
10 tools for myself in that profession. It wasn't in the  
11 sense of making machine tools.  
12 Q It looks like you've got a lot of continuing  
13 education at Kent State University and the Traffic  
14 Institute.  
15 A Yeah. Most of the meetings at the American Academy  
16 of Forensic Science are at least half a day. The  
17 Engineering Science Program has motor vehicle cases.  
18 Q Recognized programs for accident reconstruction-type  
19 things would be --  
20 A Specifically, yeah.  
21 Q -- like at Northwestern University?  
22 A Yes. There were seminars where I ran into  
23 Sgt. Veppert.  
24 Q Or like the program at the University of North  
25 Florida?

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<p>1 A Yeah. That was actually held in Maryland, but it</p> <p>2 was taught by someone from IPTM.</p> <p>3 Q You recognize those as --</p> <p>4 A They are worth listening to.</p> <p>5 Q People are trained there as --</p> <p>6 A Yes. I don't agree with everything they teach at</p> <p>7 all, but I they are worth listening to.</p> <p>8 Q People who are trained at either Northwestern or</p> <p>9 North Florida are qualified and certified by</p> <p>10 those --</p> <p>11 A You're asking me with respect to Sgt. Veppert's</p> <p>12 certification as a traffic reconstructionist. The answer</p> <p>13 is yes. It's a hell of an examination. It's not to</p> <p>14 be -- to put him on your logs there.</p> <p>15 MR. BACHMANN: I think I'm done, but I am going</p> <p>16 to stretch my legs for a few minutes.</p> <p>17 (Thereupon, a recess was taken.)</p> <p>18 By Mr. Bachmann:</p> <p>19 Q Mr. Davidson, I found in your file some additional</p> <p>20 photographs and here's a packet, for example.</p> <p>21 A I can just characterize all of them as being taken</p> <p>22 after the accident. A lot of them are out of focus.</p> <p>23 They are not real good and clear. I didn't pay a whole</p> <p>24 lot of attention to any of them. I was much more</p> <p>25 interested in the actual at-scene photographs, the ones</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7 I, JO DAVIDSON, do verify that I have read this</p> <p>8 transcript consisting of one-hundred eight (108) pages,</p> <p>9 and that the questions and answers are correct.</p> <p>10</p> <p>11</p> <p>12 JO DAVIDSON</p> <p>13</p> <p>14</p> <p>15 Subscribed and sworn to before me this</p> <p>16 _____ day of _____, 1997.</p> <p>17</p> <p>18</p> <p>19</p> <p>20 _____ Notary Public.</p> <p>21</p> <p>22 My commission expires</p> <p>23</p> <p>24</p> <p>25</p>
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<p>1 taken right then and there.</p> <p>2 MR. BACHMANN: We're done.</p> <p>3 ---</p> <p>4 (Thereupon, the deposition was</p> <p>5 concluded at 8:42, p.m.)</p> <p>6 ---</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>	<p>1 CERTIFICATE</p> <p>2</p> <p>3 STATE OF OHIO, )</p> <p>4 SUMMIT COUNTY.) SS:</p> <p>5</p> <p>6 I, Melissa Karm, a Notary Public in and for the</p> <p>7 State of Ohio, duly commissioned and qualified, do hereby</p> <p>8 certify that the within named witness, JO DAVIDSON, was</p> <p>9 by me first duly sworn to testify the truth, the whole</p> <p>10 truth and nothing but the truth in the cause aforesaid,</p> <p>11 that the testimony then given by him was by me recorded</p> <p>12 in stenotype in the presence of said witness, afterwards</p> <p>13 transcribed using computer-assisted transcription; and</p> <p>14 that the foregoing is a true and correct transcription of</p> <p>15 the testimony so given by him as aforesaid.</p> <p>16</p> <p>17 I do further certify that this deposition was taken</p> <p>18 at the time and place in the foregoing caption specified,</p> <p>19 and was completed without adjournment.</p> <p>20</p> <p>21 I do further certify that I am not a relative,</p> <p>22 counsel or attorney of either party, or otherwise</p> <p>23 interested in the event of this action.</p> <p>24</p> <p>25 IN WITNESS WHEREOF, I have hereunto set my hand and</p> <p>affixed my seal of office at Akron, Ohio on this 31st day</p> <p>of December, 1997.</p> <p>19</p> <p>20 MELISSA KARM, Stenographic</p> <p>21 Reporter and Notary Public for</p> <p>22 the State of Ohio.</p> <p>23</p> <p>24 My commission expires November 29, 2000.</p> <p>25</p> <p>---</p>



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[illegible]



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