STATE OF NORTH CAROLINA IN THE GENERAL COURT OF JUSTICE
SUPERIOR COURT DIVISION
COUNTY OF CABARRUS 04-CRS-21941

STATE OF NORTH CAROLINA)
)
V.) TRANSCRIPT
)
JOHN PAUL BOMBARD)
)

The above-captioned case coming on for hearing at the June 5, 2006 Criminal Session of the Superior Court of Cabarrus County, before the Honorable Michael Beale, Judge presiding, the following proceedings were had, to wit:

A P P E A R A N C E S

For the State: Jennifer Hughes
Office of the District Attorney
Cabarrus County Courthouse
P. O Box 70
Concord, NC 28026-0070

For the Defendant: Duane S. Miller
Koontz, Hawkins, Nixon & Miller
2 Church Street, S.E.
P.O. Box 744
Concord, NC 28026

Reported by: Stephanie W. Culpepper, CVR-CM

Reporter's Note: This transcript contains only the trial testimony of Paul L. Glover.

Wednesday June 7, 2006

Date Requested: June 30, 2006

Date Delivered: October 2, 2006

I N D E X

Paul L. Glover, having been first duly sworn, testified as follows on Direct Examination by Ms. Hughes:

Q. Please state your name for the Court.

A. My name is Paul L. Glover.

Q. And what is your occupation?

A. I'm a research scientist and training specialist with the Forensic Tests for Alcohol Branch, which is a part of the Department of Health and Human Services for the State of North Carolina.

Q. And what is your present title or position?

A. Research scientist and training specialist.

Q. If you could please describe briefly the subject matter of your specialty there.

A. I deal with issues related to breath testing for alcohol, blood testing for alcohol, blood testing for drugs, the instrumentation that's used in those tests, the effects of the different compounds on humans, scientific issues that relate to both the effects of the compounds and the scientific issues related to testing.

Q. Do you have any specialization within that field?

A. I deal with scientific rebuttals.

Q. And if you could please tell us what academic degrees that you hold.

A. I have a B.S. in biology that I got at Florida State University in 1974 and a Masters in biology that I got at

Florida State University in 1978.

Q. Do you have any specialized degrees or specialized training?

A. I'm certified as a chemical analyst on the Intoxilyzer 5000, certified to do preventative maintenance on it, certified to do preventative maintenance or maintenance on the Alcosensor. I've attended a course of instruction at Indiana University for Highway Safety Supervisors. This course dealt with alcohol in humans, how alcohol gets in humans, what happens to it once it's in them, the effects that it has on them, and the various methods for determining alcohol concentrations in humans. Also attended a course of instruction at Indiana University that deals with the effects of drugs on human psychomotor performance.

Q. If you could please tell us the positions that you've held since your formal education and the length of time you've been in each position.

A. I was a research scientist at Oak Ridge National Laboratory in Oak Ridge, Tennessee for seven years, research scientist at the National Institutes of Environmental Health Sciences in Research Triangle Park for five years, and a research scientist at Burroughs Wellcome Pharmaceutical in Research Triangle Park for seven years.

Q. Now, specific as to your current position as a

research scientist training specialist, if you could tell us what your duties and functions are in that position?

A. I supervised 14 field staff as one aspect of my job. They are responsible for training the officers on how to use the Intoxilyzer 5000. They conduct a one-week operator's school and the one-day re-certification class that the analysts have to go through every two years. I supervise these individuals. I give them in-service training on issues related to breath testing for alcohol, blood testing for alcohol. I evaluate individuals who submit applications for the testing of blood for the presence of alcohol and drugs. I deal with scientific issues that come up in the sense that I follow the scientific literature or review things that have come out recently, studies that have been done by individuals over the years, and conduct in-service training for both my staff, for law enforcement officers, prosecutors, and district court, or new district court judges.

Q. Have you personally taught any classes in this field?

A. Yes. I have participated with the Conference of District Attorneys in teaching a cross training class where we would have, go to different areas of the State and do a one-day class where we teach officers and prosecutors about the different things involved in testing for alcohol, things that occur with individuals testing for drugs, the

effects of drugs. Done that probably about 20 of those classes. I do a class for new prosecutors every fall in Chapel Hill, again to go over the Intoxilyzer, how it functions, and alcohol pharmacology in humans. I've taught a class at the National Advocacy Center in Columbia, South Carolina on alcohol toxicology. I think that's most of what I've taught.

Q. Now, how long have you been in this current position as a research scientist for the Department of Health and Human Services?

A. It will be nine years on September 1st.

Q. And do you have any publications in this field or related to this field?

A. Yes. I did a couple of different studies that were published as part of the proceedings for some international meetings. One study dealt with the effects of interfering substances on breath, specifically toluene. That study was accepted for a conference in Stockholm, Sweden in 2000 and I presented the research that I did at that meeting and it was published as part of the proceedings.

I did another study where I looked at the effects of heat on blood samples that contained alcohol where we left tubes of blood in a patrol car for up to 78 days and monitored the temperature to see what the effect would be on the sample. That was also accepted and published as

part of the proceedings for the International Council on Alcohol, Drugs, and Traffic Safety in 2002 in Montreal. And then I've had a number of presentations that I've done that have been published as part of the proceedings for the International Association for Chemical Testing.

Q. Are you a member of any professional societies or professional associations?

A. Yes. I'm a member of the International Council on Alcohol, Drugs and Traffic Safety and a member of the International Association for Chemical Testing where I've been on the executive board for the past two years and am still on the executive board.

Q. And have you ever testified as an expert in court before?

A. Yes, I have.

Q. How many times?

A. Close to 170 times.

Q. Would that have been in what kind of court, state court, federal court?

A. Federal court and state court in North Carolina.

Q. And has that been just for the state's side or has that been for defense also?

A. It's been for both. I've been subpoenaed by the defense over a hundred times and called as a defense witness about six or seven times now.

MS. HUGHES: Your Honor, at this time the State would ask to tender Mr. Glover as an expert in breath alcohol testing, Intoxilyzer 5000, and the physiology and pharmacology of alcohol and related research.

THE COURT: Okay. Any questions?

MR. MILLER: Your Honor, I would object as to anything on the Breathalyzer and the --

THE COURT: All right, members of the jury, step in the jury room just a minute.

(The jury left the courtroom.)

THE COURT: All right, what areas do you want to tender him as an expert in again?

MS. HUGHES: Breath alcohol testing, the Intoxilyzer 5000, the physiology and pharmacology of alcohol and related research.

MR. MILLER: Your Honor, the first two I am not going to consent to, but I think that he has been admitted prior and will be admitted on those issues. As far as retrograde extrapolation --

THE COURT: Require some further foundation laid on physiology and toxicology?

MR. MILLER: Yes, sir. That's what my position would be.

THE COURT: I'll find he's certainly qualified as an expert in breath testing and Intoxilyzer 5000. All

right, go ahead. You've got his training and methodology, et cetera.

Voir Dire Direct Examination by Ms. Hughes:

Q. Mr. Glover, specific as to the physiology and pharmacology of alcohol, have you ever been tendered as an expert specifically in those areas?

A. Yes, I have.

Q. When was that, do you recall?

A. Probably over 120 times of the 170 times I've testified. It may be more than that. Except for the drug cases, I've been tendered in virtually all those in that area.

Q. And what training and experience do you have to be able to testify in these types of subjects or those subject matters specifically?

A. Well, the class in Indiana is one where we have some of the world's most recognized experts teaching classes that deal with alcohol in humans. We go through how alcohol gets in them, how it's distributed throughout them, the fact that it goes into the stomach when it's consumed by drinking. It goes through a valve in the bottom of the stomach called the pyloric sphincter where it goes into the first twelve inches of the small intestine where it's rapidly absorbed. It's then distributed throughout the body in the water containing tissues. Because alcohol has

a very high affinity for water, once it hits the blood, the blood is circulating, alcohol is going to be distributed into all the water containing tissues, muscle, brain, any of those organs. Very little of it goes into the fat.

Once it's in an individual part of circulation carries blood through the liver. The liver has an enzyme in it called alcohol dehydrogenase. This enzyme breaks alcohol down. So as blood carries alcohol to the liver this enzyme will break it down. Around 95 percent of the alcohol consumed by humans is broken down by alcohol dehydrogenase in the liver. The other five percent is lost through breath, sweat and urine. There is no way to speed up that elimination of alcohol. Essentially you're tied to your liver and how quickly it can process it and that has a limit on it.

The literature, I have reviewed the literature over the past nine years concerning these areas. I have over 600 different publications that I have collected that deal not all of them with alcohol, but the vast majority of them that deal with alcohol. Again, how you test for it and also the effects of it and how the body processes it.

Q. Does it also include retrograde extrapolation?

A. Yes. Retrograde extrapolation is when you're going to take an alcohol concentration at one point in time and calculate where it would have been at an earlier time. The

way and the rate that the body eliminates alcohol has been studied for over 70 years. There have been publications as early as 1935 where they publish the rates that it's eliminated. They do that by dosing individuals with alcohol, taking a sample of blood. Back then, now you either do blood or breath, measure the concentration of alcohol, measure it again at another point in time, measure it at another point in time, and with that you're able to determine the rate that alcohol is eliminated. With humans there is a predictable accepted rate. As an average rate there's one that's been accepted by the courts in North Carolina for over 20 years that we typically use.

Q. Now, how do you know all this information?

A. I know it from my courses I've attended through additional seminars I've attended and through my reading of the literature.

Q. Now, specifically as to the approximately 120 times that you've been tendered as an expert in the specific field of physiology and pharmacology of alcohol and related research, was that in federal court or state court?

A. It's been in both.

Q. And was that in district court or superior court?

A. District -- superior court has been in excess of a hundred times.

Q. And that's specific to those fields that we're

discussing?

A. Yes.

Q. And in those cases or in those times were you able to give a number in reference specifically to retrograde extrapolation?

A. Yes.

MS. HUGHES: No further questions, Your Honor.

THE COURT: Okay, any questions?

MR. MILLER: Yes, Your Honor.

Voir Dire Cross Examination by Mr. Miller:

Q. These courses in Indiana that you've taken, how long do they last?

A. They are one-week classes.

Q. So you've had two weeks of classes in Indiana?

A. Yes. One was with alcohol, one was with other drugs, cocaine, marijuana, opiates, benzodiazepams.

Q. So with alcohol you've had a one-week course?

A. Yes.

Q. You've got a biology degree?

A. Yes.

Q. Bachelors and masters?

A. Yes.

Q. You don't have any doctorate degrees?

A. No, I do not.

Q. You're not a physician?

A. No, I'm not.
Q. Not a pharmacist?
A. No.
Q. You studied other publications from Widmark down?
A. From Widmark on up. There are a lot of studies that there's absolutely no way that I could do or that any one individual can do. Some studies can no longer be done for ethical reasons and so we have to rely on published studies that have been published in peer review journals.
Q. And you stated that these publications, you said they were accepted in these international countries. They were included in a presentation but they were not reviewed --
A. They were reviewed by the people putting on the conference and they would determine whether or not it was acceptable to them for these to be presented.
Q. Have you ever had one presented in the United States?
A. The ones at the International Association of Chemical Testing. I also presented the study where I looked at the effects of heat on the blood samples. And I've done a presentation almost every year at that meeting in the United States since I've been with the program.
Q. On extrapolations, have you published anything on that in the United States?
A. On extrapolations, no, I have not. I have been able to calculate rates of elimination and demonstrate rates of

elimination in subjects where we've had multiple samples. When I've done that, looked at it, those results are consistent with the results that have been published for over 70 years.

Q. And I'm not attacking you personally you understand.

A. That's fine.

Q. But wouldn't it be fair to state that you look at other people's work and then have taken that and formed your own conclusions? YOU don't have any degrees or anything else. Anyone could look at the same publications that you've gotten and take the one-week course and they would have the same amount of expertise that you have.

A. I don't think that they would have the same amount of expertise. I think if they spent nine years in the field and if that was what they did essentially every day that they would develop an expertise and they would develop a knowledge base.

I do have my background in biology as a basis initially. I was a research scientist for 19 years at three different institutions where I worked at the bench on a regular basis doing scientific procedures. Through publications I was involved in those that were not related to alcohol. As far as doing science, we always have to rely on other people's publications. We simply cannot conduct all the studies.

Q. Would it be fair and accurate to state all of your prior employment before becoming employed by the State of North Carolina in this job was not related to alcohol testing?

A. That's correct.

MR. MILLER: Your Honor, that's all I have. Just wish to be heard briefly.

THE COURT: All right. Any other questions you want to ask him?

MS. HUGHES: No, Your Honor. I don't have any further questions. I just have case law if the Court's interested.

THE COURT: Okay. I'll be glad to consider the cases you want to show me.

MS. HUGHES: May I approach?

THE COURT: Any case law you have, Mr. Miller?

MR. MILLER: It's the same case that I have, Your Honor.

THE COURT: Okay.

MR. MILLER: My argument's essentially the same as in that case, but I'll let you read that first.

THE COURT: I'm sorry?

MR. MILLER: If you'd like to read that first before I make --

THE COURT: Yeah, let me look at this case.

I've read it, but it's been a while. (Reviews case.)

Voir Dire Examination by The Court:

Q. Mr. Glover, have you also done experiments yourself to determine the average rate of elimination of alcohol from the blood?

A. I have measured the rate of elimination in people, yes, sir. They've been on breath samples, not on blood samples.

Q. Right. And this has been generally accepted in the scientific community since the '30s, is that what you said?

A. Yes, sir, it has.

Q. And your degree is in biology?

A. Yes, sir.

Q. Both a B.S. and a masters?

A. Yes, sir.

THE COURT: All right.

MR. MILLER: Your Honor, I go through the same, don't want to put forth the same arguments, but I would suggest this is hearsay. I also point out reading those same arguments this case is different when it's a straight elimination period. We had a drink in between on this period. Now, the Court may decide that's a matter of credibility. That's the difference between this case, *Cato*, and the case that we have at present. I'll leave that to your discretion. What the cases seem to state with

a straight elimination there's no drinking after the fact. That's going to be admitted and the jury will judge the credibility of it. However, our case here is different because there is drinking after the fact I think that even the State has put into evidence so far and therefore that changes, I think, the stance with Cato involved. Leave that to your discretion.

Further Voir Dire Examination by The Court:

Q. Mr. Glover, are you familiar with the average amount of alcohol in a 12-ounce can of beer?

A. Yes, sir.

Q. You've done studies yourself as well as any scientific --

A. Yes, sir. We, in our operator's schools on Wednesday and Thursday afternoon we do controlled drinking exercises. We've also done additional controlled drinking exercises where judges are, using judges, using prosecutors, where we give them known amounts of alcohol based on their weight in order to get them to a target volume. We do that because we know how much alcohol is in there and how much to give them to get them to that point.

Q. These extrapolation figures are also based on weight of a person?

A. No, sir. The concentration that you want to get an individual to is based on weight and that if you want to

fill a small cup with water it takes a certain amount. If you want to fill a large cup with water it takes more. But if you have a hole in the bottom of them it drains out at the same rate. The size doesn't matter. So what we see in humans is that with respect to the elimination the concentration goes down and it's irrespective of gender within driving population ages. It's irrespective of age. If we look at infants we see a higher rate of elimination. But in driving populations we see --

Q. Are elimination rates basically the same with all human beings?

A. We see about a ten percent higher rate in females. But if we look at weight and if we look at age --

Q. What about in concentration of alcohol, would a hundred pound person take less alcohol to reach a .10 than a 200-pound individual?

A. Correct. It would take twice as much to get the 200 pound, but that's when you're going to measure how much you give them to get them to that level.

Q. Right, but --

A. Once they're at that level we get both of them to a point where no, they're going to both get to zero at the same time because they're actually processing more grams but the concentration is going down at the same time.

Q. Was all that part of the studies you've done and --

A. It's part of the studies that have been done. I've not been able to look at a population of say 18-year-olds to 70-year-olds myself, but the studies that have been done where they've looked at that they've looked at about 3,500 different people and published those studies.

THE COURT: All right. Anything else?

MR. MILLER: Could I ask one question, Your Honor?

THE COURT: Yes, sir.

Voir Dire Recross Examination by Mr. Miller:

Q. You're stating that, you stated the elimination rate is the same for all these people?

A. I'm saying that the average rate -- what we see in an individual with no experience with alcohol we'll see a somewhat slower rate. If we look at a chronic abuser we will see a rate that's almost twice that. But when we look at an average individual, not a chronic abuser but what we would consider to be an average person, we do see a rate that is an acceptable rate. If we look at the impaired or the drinking driving population specifically we see a higher rate of elimination and that's because essentially the body is responding to a toxin and what it does is it finds a way to eliminate this toxin faster. The rate that we use is a rate that is typical for a nondrinking driving population is a slower rate.

MR. MILLER: And Your Honor, this may be --

Q. You're saying the average rate. Actually the rate can be from .01 to .39?

A. .39 is really not credible. About a .03 is probably a upper range and that's the chronic abuser. That would be someone, say, that drinks a fifth a day for six, eight years. So any rate lower than about a .012 has not really been considered a credible rate. The rate we use is .0165 which is slightly higher than the total inexperienced drinker.

Q. And you plan to testify as an expert that there's the average rate that you're going to use?

A. I would be using an average rate, yes.

Q. Even though specifically you cannot testify exactly what Mr. Bombard's rate is?

A. That's correct. And I'd be more than glad to project it using a chronic abuser rate and also using a .012 which is the low end rate. The difference between .012, the absolute value between .012 and .0165 in this, depending on the time window here, is not going to be significantly different. If I use a .03 we're going to see about a twofold increase which would make it even higher.

Q. But you cannot testify to the jury with certainty exactly what Mr. Bombard's rate is, can you?

A. No, I cannot.

MR. MILLER: That's all I have, Your Honor.

THE COURT: All right. Any other argument before I make my ruling?

MS. HUGHES: No, Your Honor.

MR. MILLER: No, sir.

THE COURT: All right. The Court will find that he may testify as an expert in the area of effects of alcohol on humans and alcohol extrapolation. The Court has considered the testimony of the witness pursuant to the test in *Howerton v. Arai Helmet* found at 358 N.C. 440. The Court finds that the proffered method of proof is sufficient and reliable, that the witness is qualified as an expert and that this expert testimony is relevant to the findings that the jury will have to make in this case.

Let's let him step down and let's take a little break before we resume with the actual trial, okay? You can step down, Mr. Glover, and let's let the jury out of that little room and give them a little break, okay?

(The jury returned to the courtroom.)

THE COURT: Okay, members of the jury, the Court will allow this witness to testify in this case as what is called an expert witness. The Court instructs you that an expert witness is one who by education, training, or experience has become an expert in any art, science, profession, business or calling. An expert witness is

permitted to give his opinion in matters in which he is an expert and may also state the reasons for his opinion. You should consider each opinion received in evidence and give it the weight you believe and think it deserves and you may reject it entirely if you find that the alleged facts upon which it is based have not been proved or that the reasons given in support of the opinion are not sound.

At this point we'll take our morning break and let you get out of that little room for a minute and let us have a break for about 15 minutes and then we'll resume the testimony and you just gather back in the jury room and I'll bring you back out here to resume Mr. Glover's testimony in 15 minutes. Okay? All right, we'll let you leave first.

(The jury left the courtroom.)

(A recess was taken.)

(Counsel for the State, counsel for the defendant, and the defendant are present in the courtroom.)

(The jury returned to the courtroom.)

THE COURT: Resume your questioning.

Further Direct Examination by Ms. Hughes:

Q. Mr. Glover, what is post driving consumption?

A. It's when someone drinks some alcohol after they've been driving. In other words, after, say, a crash or if, after they were stopped.

Q. Now, in your training and experience are you able to determine whether such a claim like this is true?

A. It depends on the facts. We can examine whatever a claim is to see if it's got some validity to it.

Q. And what type of information do you need to be able to examine this further?

A. Essentially whatever the reported result was and what was claimed to have been consumed. The time is not terribly crucial depending on what was consumed, but the time is nice to have.

Q. And do you need to know any additional things about the person or the subject involved?

A. Yes. When we dose individuals with alcohol in our classes we take their weight and we dose them according to weight, because if you are going to try to get a 100-pound person to a .08 and a 200-pound person to a .08 you have to give the 200-pound person twice as much alcohol to get them to a .08 as you would give the 100-pound. And so we like to, we look at the weight again and we use that in looking at the amount of alcohol that was consumed.

Q. And is the amount actually an important factor to know?

A. Yes.

Q. Now, do you have to have all that information you talked about in order to come up with something?

A. The more I have the easier it is to evaluate it.
Q. Now, before dealing with the specific facts of this case can you generally explain once you get this information or all these things what do you do with this information?
A. Well, what I would do, I would start with the reported alcohol concentration, whether it was a breath test or a blood test, and the time. We always know the time that either the blood was collected or the breath was tested. Take that reported alcohol result and then look at what the subject said they consumed and their size and determine how much of an influence that would have had on the result.
Q. And how is it that you conduct these type of calculations?
A. Well, again, when we dose individuals we do it based on their weight and so we know if we give a person of a certain size so much beer that it will give him a particular alcohol concentration.
Q. Now, you keep talking about dosing individuals. Are you referring to controlled drinking sessions?
A. Yes. We have our operator schools for the officers who become chemical analysts on the Intoxilyzer. They're on Wednesday and Thursday afternoons. The class is divided in half. The people who want to participate in it can

bring alcohol and they're dosed. Half of them get dosed with whatever they bring, whether it's hard liquor or wine or beer. They're dosed with an amount that's calculated to get them to a .08. We do that so that the other half of the class can then test them on the Intoxilyzer. They can see in fact how much it took to get that person to the level. They can see the effects. They can see the progression of effects when their classmate starts out at zero and they get up to a .08 and then actually have a subject who's at that level sit down at the Intoxilyzer and test them.

Q. Now, are you able to observe different levels of impairment during these exercises?

A. Yes.

Q. If you could please explain to us that in a little more detail.

A. Well, essentially as the concentration goes up you see more impairment. You see different signs of impairment in different people. Some are happy. Some are sad. We see real differences between somebody who's alcohol free and say someone who's at an 08, 09, 010, I mean .10. Would you see a real huge difference between somebody at an 08 and a 07? Probably not just doing tests on them.

Q. Now, does time play a factor in the levels of impairment?

A. Well, time plays a factor in what we would call the ascending part of the curve. When you give someone alcohol the concentration goes up. And if you give them what's called a bolus dose which would be one large drink and they drink it in say five minutes, ten minutes, you'd see the concentration go up and then you'd see their concentration come back down. You would see a progression of impairment over time as that concentration is going up and you would see some decrease, depending on how long you observed them afterwards.

Q. Why does it take that amount of time or any certain amount of time for that to happen?

A. Well, when you drink alcohol you drink, it goes into your stomach. There's a valve in the bottom of your stomach called a pyloric sphincter which admits the stomach contents into the small intestine. The alcohol is a very small molecule and it's absorbed very, very rapidly in the first twelve inches of the small intestine, goes into the blood. Alcohol has a very high affinity for water, so it goes into water containing tissues, blood, muscle, brain, organs. It will go into those. As the blood circulates it carries the alcohol around and distributes it. So it takes time for it to be absorbed to get to the different areas and ultimately to get to the brain which is where the impairment occurs.

Q. Now, back specifically to this case at hand, I provided you with some information regarding the defendant, is that correct?

A. Yes.

Q. And tell us specifically what you looked at to form calculations and investigate this particular subject.

A. Well, I looked at the breath result, the .14, and the times that it was, the subject was tested, which was I believe 1:48. I looked at the time that the crash was reported to have occurred and the time that, the time and amount of alcohol that was reported to have been consumed after the, I say the crash, after the deer was struck, and also looked, factored in the subject's weight in the whole thing.

Q. Now, did you also have the opportunity to hear Trooper Cook testify as to the statements that he testified the defendant made to him about the amount of the one 12-ounce beer he consumed after the wreck?

A. Yes.

Q. And did you take that into consideration also?

A. Yes, I did.

Q. Now, do you have an opinion as to what effect one 12-ounce beer would have on an approximate 160-pound male and how that would affect the results of an Intoxilyzer at that time?

A. Yes, I do.

Q. Would using a flip chart help you illustrate your testimony?

A. Yes, it would.

MS. HUGHES: Your Honor, at this time we request for Mr. Glover to step down and be able to illustrate his testimony on a flip chart, and if me and Mr. Miller could reposition ourselves to do that?

THE COURT: Okay.

A. (The witness left the stand.)

Q. Now, if you could please tell us what your opinion was. You said you did have an opinion as to what that effect would have.

A. Yes. And I can give the opinion when I'm drawing. It's just a little bit easier to illustrate what I'm saying.

What I do initially is, I want to do a time line. The time out here (indicating) is 01:46. That was the time that the breath test was conducted. We have, if I go back three hours this would be 12:46 (indicating), 11:46 (indicating), 10:46 (indicating). Now, at the time the subject was tested there was a result reported. I'll use this solid black dot right here (indicating). The results were 0.14. In this window at the time of the crash which was 10:45, I've just gone back an even three hours, but

from this time (indicating) and this window of time right here before the trooper showed up (indicating), and in this window he was told that one 12-ounce beer was consumed, and that any other drinking had ended I believe it was at 9 o'clock was when other drinking had ended. And in this case the subject's reported weight was 157 pounds. When I look at all this information what I do is in order to eliminate the amount of alcohol that this one beer added based on this weight, what I would do is reduce this value (indicating) down to .12.

Q. How do you come up with that value?

A. We know that, I know that value because the weight and the amount of alcohol in a 12-ounce and it's actually, it would be something less than .02 difference, but I round up to make it a little bit easier, so I'm taking off a larger amount. So essentially I reduce this from a .14 to a .12 at the time of the breath test, because what I'm saying is that this one beer added alcohol to the system during this time, that the amount that it added could only have been a .12, well, .02, so it reduces this down to a .12.

Q. Now, the wreck occurred three hours before, correct?

A. Yes.

Q. What would be happening to the alcohol in the defendant's system during this time?

A. Well, the alcohol in humans is eliminated in the liver primarily, about 95 percent of the alcohol is eliminated by an enzyme called alcohol dehydrogenase. As the blood goes through the liver this enzyme is there, it will break down the alcohol. This starts occurring as soon as you get alcohol in your system, within probably three or four minutes of your first sip you're already starting to eliminate. It's not like you've got to get it all in and then you start breaking it down. We frequently use an analogy of filling a bathtub with the drain open. If you turn the water on and the drain is open some water goes down the drain right away. If you turn it on fast enough the level starts to go up but water is always going down that drain. That's the same thing that's happening when you're drinking alcohol. Some is eliminated, never even had a chance to get to your brain or any other part of your body. So in this time, the time of the crash, out through here (indicating), alcohol is constantly being eliminated.

Q. Now, are you able to calculate what the concentration would have been at an earlier time?

A. Yes. We use an average rate of elimination that has been accepted for many, many years, and that's an amount that a subject's BAC would go down per hour. We do that simply by dosing people with alcohol and we would measure them at one time, measure at another time, measure at

another time, and we find out how much it's going down each hour. The value that we use is .0165 BAC per hour. And what that means is that we would expect the subject's alcohol concentration to go down this much (indicating) each hour.

To figure out what the concentration would have been at an earlier time we look at the amount of time that's elapsed and this rate of elimination, because you're always eliminating it. Even if you drank some in here (indicating) you're still eliminating by subtracting this value out at the blue dot right here (indicating) and making it .12. What we would do is multiply this (indicating) times the three hours that elapsed from the time that the deer was struck until the time of the breath test. And then the value that you get with this is .0495. We truncate this value, which means we drop it off and we would make it a .04. It's always rounded down. That's the amount that we calculate would have been eliminated in this time. And what you come up with is the result that we would have had at this time, the time of the crash. If he would have plotted it out on that graph paper here we'd see that the line would slope like that (indicating) and we'd get a result here (indicating). It would have been a .16. That's by taking the .04 and the .12, the value that we get is 0.16.

Q. And is that still taking into consideration the one 12-ounce beer after the wreck?
A. Yes. We took care of that by reducing the reported, that 14, I'm going to start with a 12 instead of a 14. If I had left it at a 14 I would have a line parallel to this that would have been even higher up here.
Q. So do you have an opinion as to the impairment level at the time of the wreck from the facts of this case that you've been provided?
A. The impairment level or the alcohol?
Q. Excuse me, the breath alcohol content.
A. In my opinion the calculated value based on these facts would have been a .16.
Q. And that would have been at the time of the wreck at 10:45 approximately?
A. Yes.

MS. HUGHES: I don't have any further questions from this chart, but I do have further questions for Mr. Glover.

THE COURT: Okay, thank you. Mr. Bailiff, you can get the chart. Will you be needing that any further?

THE WITNESS: I don't think so.

Q. Now, Mr. Glover, are you aware of any test or study specifically in reference to false teeth or partials, as they've been referred to, and any effects that they would

have on an Intoxilyzer result?

A. Yes, I am.

Q. And could you please tell us about those?

A. Because false teeth is a concern or a potential concern, the study was conducted in Wisconsin by an individual named Pat Harding. The study was published in a peer review journal. What they did was they took individuals who had upper dentures, lower dentures, upper and lower dentures, about I think 34 people involved in this particular experiment. They tested them with adhesive and without adhesive and they used the powder adhesive, the squirted out adhesive, and some little felt pad adhesives. So they did a number of different variations in that.

The individuals who were alcohol free, they gave them an ounce of brandy to hold in their mouth for two minutes and then had them spit it out. They then measured alcohol on their breath over the next 15, 20 minutes. And what they found is that by ten minutes the individuals were showing zero alcohol on their breath because it dissipates that quickly. We have a 15-minute observation period in our procedures that's required where a subject has to be observed by the officer before he's tested. That's, I won't say an excessive amount of time, but it's more time than is needed based on the studies that have been done. But any alcohol that would be present dissipates so quickly

from the mouth itself that it's not a problem, and specifically with the dentures it's not a problem.

Q. And specifically in this case and what you've heard as far as any testimony from the trooper, did you see that these false teeth that Mr. Bombard was wearing would have had any effect on his Intoxilyzer result in this case?

A. No. The trooper had the 15-minute observation period, the official observation period, but in fact he was with the defendant for over an hour before he was tested and I didn't hear any testimony about anything being consumed once the trooper was on the scene. So --

MS. HUGHES: Thank you. Your Honor, at this time the State would ask permission to mark Mr. Glover's chart as State's Exhibit Number 2 and offer it for illustrative purposes.

THE COURT: All right. State's Exhibit Number 2 may be received as illustrative evidence.

MS. HUGHES: Thank you, Your Honor. I don't have any further questions for Mr. Glover at this time.

THE COURT: Okay. You may cross examine the witness.

MR. MILLER: Thank you, Your Honor.

Cross Examination by Mr. Miller:

Q. Mr. Glover, you're employed by the State of North Carolina?

A. Yes, I am.
Q. And you've been in this position how many years?
A. Almost nine years.
Q. And you're also a licensed law enforcement officer, aren't you?
A. Yes, I am. I've been a reserve police officer for the City of Durham for the past 20 years and that's a non-paid voluntary position, and I've been a reserve police officer with the University of North Carolina at Chapel Hill for the past 14 years where I work special events.
Q. And you've actually made arrests for DWI in your law enforcement career?
A. Yes, I have.
Q. Now, prior to becoming employed by the State of North Carolina you said you were -- let me get what you said -- a research scientist?
A. Yes.
Q. But you don't have any doctorate degrees?
A. No, I do not have a doctorate.
Q. How do you define scientist?
A. An individual who is doing research I'd say on a daily basis in a scientific laboratory would be a scientist.
Q. Anybody that's doing research in a laboratory would be called a scientist?

A. That's a fairly general description, but yeah, I did it for 20 years.

Q. And when you were doing this for 20 years none of that related to blood alcohol, did it?

A. No, it did not.

Q. Totally different thing?

A. Correct.

Q. You don't have any degrees as a pharmacist, do you?

A. No, I do not.

Q. Physician?

A. No.

Q. Do you have any degrees over and above the master in biology?

A. No, I do not.

Q. Would it be fair to state regarding alcohol that your sole training, additional formal training is a one-week course in Indiana?

A. I wouldn't say that's the only formal training. There have been the conferences I've gone to where we have some of the most widely recognized experts in the world in alcohol that do presentations that we interact with. So I mean, it's not just the school in Indiana.

Q. These conferences you go to, I assume they're advertised to the general public but mostly people interested in these specific facts could go to those. It's

open to the public, correct?

A. Well, they are -- it's an organization. If you're a member of the organization you get the information about the conference coming up. If you're a nonmember and wanted to pay your money then you could attend.

Q. Anybody can attend these conferences?

A. Yes.

Q. And they can interact just as you did?

A. Excuse me?

Q. They could interact just as you did?

A. Yeah.

Q. Now, you base most of what you testified here today about studies you said that are 60 or 70 years old?

A. No. The studies have been done as far back as 70 years ago, but the studies are ongoing. There are people who have done them that continue to produce research on alcohol in inmates and different aspects of it. So I mean it's, the one that was just published this year where they looked at the rate of elimination in individuals who had been burned severely. So I mean, as early as 70 years ago they were initially published and they have been published since then.

Q. And you state that you had submitted documents to international studies, but you've never submitted any documents that have been published here in the United

States?

A. Well, my presentations have been published as part of the proceedings for a number of different conferences I've been to in the United States, but it's not just limited to the one in Stockholm or the one in Montreal.

Q. How many times -- would it be fair to state that the overwhelming majority of the time that you've testified in court is for the prosecutor?

A. Yes.

Q. And is it fair to state that you work closely with prosecutors in training?

A. Yes, we do. We train new ones every fall. We also train new district court judges. So we do work closely with them, but we support our program. So our program is there to provide the instrumentation and the training to the officers to be able to conduct these tests.

Q. And this extrapolation that you've shown us here is something that you do to assist the prosecutors in DWI cases?

A. It's to assist in conveying the information that's present in a given case.

Q. If there is a challenge or if there is a contention then I have an obligation to show if the challenge is whether or not the instrumentation is correct, then I have an obligation to show that the instrumentation is correct.

If there are other factors that tend to come in, delays in collecting a sample for reasons of a crash or something, then I have to explain what goes on.

Q. Now, you made certain assumptions here in this chart, haven't you?

A. Yes.

Q. You've assumed the accident occurred at 10:45, is that correct?

A. That's correct based on the testimony that I've heard.

Q. And then you assumed that the test was at 1:46?

A. I believe that was printed on the test record ticket.

Q. And then you assumed that the elimination period was level, you made an assumption for a specific amount. I think used .0165.

A. That's an average value that we have used in North Carolina for over 20 years.

Q. Is it an average value?

A. It is.

Q. An actual value could be from even .01 to .39, couldn't it?

A. The low end, the more credible low end was probably .012 and the upper end is right about a .03 in chronic abusers. The rates that are higher than .03 are not that many individuals that they've seen it in. So it's not that

solid a number.

Q. So you just pick an arbitrary number in the middle somewhere?

A. No. It's not an arbitrary number at all. The .03 rate of elimination is what has been observed in chronic abusers, individuals who, say, drink like a fifth a day for six or eight years. Those folks would be considered chronic abusers. When they are at levels of about a .30 and higher we see an accelerated rate of elimination. When they fall below that .30 they go to a lower rate but still an accelerated rate. The .012 rate of elimination is something that we see in individuals who have had absolutely no experience with alcohol. The 0165 is what would be considered an average value.

Q. What is Mr. Bombard's exact elimination?

A. I do not know his rate of elimination.

Q. So this number you used is for everybody?

A. It's the number that we use and that has been accepted in North Carolina for 20 years if we don't have a person's specific rate. sometimes we have multiple blood samples on individuals for different reasons and we can calculate their actual rate of elimination. But if we don't have that then we use this number which is a conservative number, particularly when we look at the drinking and driving population.

Q. So there's no way that you can tell us what his exact elimination rate is?
A. No.
Q. Now, would it not be correct that the total point of retrograde extrapolation is you take a fixed point and then apply your average figure to go back in time?
A. We're taking an average value and the time that's elapsed to go from that measured concentration back.
Q. And would it be fair to state normally when you are giving this testimony there is no drinking in between?
A. It's not often that we get post driving consumption cases.
Q. And you have to make other assumptions to get this chart to work. When can you tell me exactly was the total peak alcohol concentration of Mr. Bombard?
A. I can't tell you when his peak was. Though my opinion would be -- I can't tell you an exact time. My opinion would be that it was, would have been prior to the consumption of the one beer.
Q. Why is that your opinion?
A. Well, because, because of the concentration that would have had to have been there based on doing the retrograde and then just drinking one beer in the middle of that.
Q. So you're taking, this whole chart is based upon the

one beer?
A. That is based upon the statement that he drank one beer between 10:45 and 11 o'clock.
Q. Well, the other part of that equation is he stated that he had two beers at 9 o'clock.
A. Well, the two beers at 9 o'clock would nowhere near give the concentration of alcohol that was apparently there.
Q. Exactly. So you don't know when there was any drinking at all and how much was drank?
A. I do not know those things. All I know is the statements that were given.
Q. But to use the retrograde extrapolation you have to measure from the peak or total alcohol concentration for it to be reliable at all, if it is reliable?
A. You have to ask that question again.
Q. You used the example of the bathtub. There's always some alcohol or water going down the drain.
A. That's correct.
Q. Some is coming out of the faucet?
A. That's correct.
Q. If it's the exact same amount it stays level?
A. That's correct.
Q. You've got to know when somebody turns off the faucet when it's full, when there's no more coming in?

A. That is something that we would like to know when we, we rarely know exactly when. However, studies have shown that individuals involved in crashes, individuals who have been arrested for DWI over something like 92 to 95 percent of them are what's called post peak, and that would be concentration goes up, the peak is the top. Once you're past the top it's post peak. 92 to 95 percent of the individuals are post peak. Even individuals in a drinking situation typically have, are post peak before they finish their last drink.

Q. Now, these studies were taken just from drunken drivers back years ago, 20 years ago, correct?

A. I don't know that they were 20 years ago, but it's a collection of studies that have been done.

Q. How many studies have you read where the total sample population were people that had an accident hitting a deer or otherwise, walked home and came back in an hour-and-a-half?

A. I don't think I've had any of those.

Q. So you don't have any studies that would assist you in this particular case or these particular facts, do you?

A. Well, those, I haven't seen any studies where someone has hit a deer and gone home and had a beer and come back. It's simple as that.

Q. And in this particular case your assumption was the

peak, and I think the correct, you said, was it 10:45?
A. Yes, but that's also because he was saying that he didn't have anything to drink after 9 o'clock other than the one beer that he had after the crash.
Q. Well, how long does it normally take to absorb alcohol?
A. Well, if you're looking at a, what's called a bolus dose experiment where you give them a big drink, they pound it down in a couple of minutes, and then you look to see, you can see a range of time. There were some studies done a good while back where they saw as short as 15 minutes, as long as 90 minutes to reach the peak. That's not a social drinking situation. The social drinking situation what they see is the individual is at their peak something like 17 minutes after their last sip. So there are things that can influence it.
Q. Well, there are studies. You're familiar with Donigan, aren't you?
A. With whom?
Q. Donigan, D-o-n-i-g-a-n, where it quotes that it can be 40 to 70 minutes.
A. Again, it depends on if you're looking at a bolus dose, if you're looking at a social drinking situation.
Q. It also says if there's food in the stomach or other things it could be two, three hours possibly.

A. That's been written, but in reality we don't see peak concentrations taking that long to get there. If there's food in the stomach it retards the admission of alcohol through the pyloric sphincter. What happens is alcohol then is absorbed through the stomach wall, so it doesn't just sit there waiting to go through the pyloric sphincter. It's absorbed another route.

Q. And in fact there's many things that affect the elimination rate, aren't there?

A. Well, you're talking about absorption just then and now you're asking about elimination?

Q. Yes, sir.

A. There -- primary thing that's going to affect elimination rate will be experience with alcohol.

Q. Would food affect it?

A. Excuse me?

Q. Food?

A. It can, but it's when we're looking at, say, the third digit and they've had individuals where they would give them their alcohol IV and give them breakfast at the same time so we don't have any conflict with the food in their stomach and alcohol. And what they see then is they see a faster rate of elimination and it's thought to be because the body is in the process of metabolizing foods so things are just geared up to work more. Again, I believe

in burn victims they see a faster rate of elimination. We see a faster rate of elimination in one-year-olds.

Q. What about medications?

A. There really aren't any medications that are going to impact on rate of elimination. You can give somebody a toxic dose of fructose and increase their rate of elimination, but then you, first you have to find the fructose, then you've got to give them a toxic dose. And so it's --

Q. What about rate of consumption?

A. Excuse me?

Q. Rate of consumption.

A. Of consumption? I don't know that rate of consumption is going to really impact on rate of elimination.

Q. Okay. Concentration of alcohol?

A. concentration of alcohol, again, when we plot out the rate as it's going down it's a straight line. Until you get down to, say, a .02, so we're way down there, when we get down to like a .02 instead of it being a straight line that goes right on down it's called a hockey stick graph because it comes down and then it starts to flatten out. And so the concentration of the alcohol in the individual there shows that the rate has slowed down, but that's only when we're down in that .02, .01 range.

Q. What is the -- you used the .16. What's your margin of error on that?

A. I don't know that we, we don't use a margin of error on that. That is a value that was originally determined by Dr. Ellis at UNC School of Pharmacy. That particular 0165 has been determined by other people and I don't recall that there was any standard deviation put on that, but I'm sure there is one.

Q. As far as you're concerned that's exactly right?

A. I said it's an average value. And if you look at the math, when you truncate it and just use the 04, if you divide that you'll find out that the actual rate of elimination used there was .01333 by truncation.

Q. As I understand what you've written on there, the one beer you value at point --

A. .02 is what I've subtracted for the one beer.

Q. And you've heard testimony where there were some preliminary tests that show an increase of .03 from the handheld to the Intoxilyzer?

A. No, I don't believe there was any testimony that there was an increase. I heard the testimony about the results. And as the trooper testified, when we have an, use an Alcosensor you've got a subject blowing and you have to determine when they're getting ready to stop, so you push the button to capture the sample. Sometimes you push

it before they, way before they stop, because you thought they were getting ready to. If we don't get a deep lung sample, as the trooper said, then we won't see a true value, we'll see a lower value. And the difference between the .13 and a .11 I believe is what he testified to, that's simply going to be a sampling error. You would not see a person's alcohol concentration change that much in five minutes' time.

Q. But you don't know which one of those were correct?

A. Well, they're both correct for the sample that was captured.

Q. Wouldn't that lead you to the interpretation and conclusion that his alcohol level was rising between 1 o'clock when these were taken and 1:47 when he took the Intoxilyzer?

A. No, it would not. And that's because again we don't get a perfect sample. When you're tested on the Intoxilyzer the instrument when you blow there's a pressure switch and it requires you to blow hard enough and long enough. Once you're blowing hard enough a tone is emitted from the instrument and you keep that tone going, you have to blow for approximately seven seconds and you have to blow hard enough. Once you've done that then the instrument, well, it's analyzing all the time, but it will then, it's satisfied it will give a reported value. With

the Alcosensor it's simply an individual who's deciding when it's time to take that sample.

Q. Hypothetically if someone had left this accident scene and had consumed two 24-ounce Icehouse which are 5.5 percent alcohol by volume within a period of about an hour, I think you've already said that the range would be probably from 40 to maybe 90 minutes or 70 minutes, I believe, for a total alcohol consumption, peak consumption, is that correct?

A. You mean --

Q. I asked you two questions. Let me ask the first one.

A. Yeah.

Q. Total alcohol consumption of a beverage after, I believe it would be between 40 and 70 minutes after --

A. You're saying being fully distributed?

Q. Peak concentration.

A. Again, in social drinking situations we would see peak to be 17 minutes after the last sip and you've got to take some time, two 24-ounces, four 12-ounces, it takes time to drink them.

Q. And what is the normal alcohol volume of a beer that you consider? When you're valuing this .02 what volume percent alcohol by volume would you consider that to be, .04?

A. Four percent, yeah.

Q. And so -- or hypothetically at 5.5 they would also increase also, correct?
A. Right, two 24-ounce Icehouses would be the equivalent of a six pack of regular 12-ounce beers.
Q. And if one consumed that you talked about how you figure the .02 on the beer consumed from approximately 160-pound man consuming six beers, would that increase him to about a .141, his alcohol concentration?
A. Is your question would he be about a .14 from the consumption of two 24-ounce Icehouse beers?
Q. The little charts that we have, and you've mentioned Pat Harding from Wisconsin --
A. Yes.
Q. I have one of her American Prosecutors Research Institute where she spoke at, she has a chart, it's an Alcohol Chart for Males prepared by Wisconsin Department of Transportation, a chart going across a matrix. If I were to tell you that for a 160-pound man, six drinks, they have a value of .141, would that be close to being correct?
A. That sounds reasonable. I reviewed that particular publication, so --
Q. So those two Icehouse beers, if they were consumed, would place potentially .141 in my client's system?
A. That's correct.
Q. If he had drank those alcoholic beverages after the

accident you wouldn't have a total peak alcohol concentration of you're saying between 17 minutes and maybe I'm saying between 70 minutes, there's a period of time where he would actually peak.

A. Okay.

Q. The bathtub would be going on, the faucet and the drain at the same time.

A. Okay.

Q. Is that correct?

A. Well, the consumption is turning it on, but correct.

Q. Well, I guess he's turned it on and it's coming out, as you said, as he starts he starts eliminating something there also. Then between 17 minutes from the last drink and 70 minutes, the faucet's turned off, there's no more coming in.

A. Okay.

Q. Is that correct?

A. (Nods head up and down.)

Q. At that point you can start measuring from what you say accurately is from the .0165, your average, that's where you start the average from?

A. You're eliminating all the time and you're eliminating at that rate all the time.

Q. Correct. But we turned off the faucet between 17 minutes to 70 minutes, correct?

A. Okay.
Q. As I understand it. But you can't use retrograde extrapolation until the faucet is turned off to get an accurate, anywhere near accurate?
A. Well, I think one of the things that you're missing is the fact that regardless of if a person has reached their peak or not they are still eliminating and they are still eliminating at that rate and you have to account for the alcohol that was eliminated in that window of time.
Q. I understand that, but you're taking us back based upon a standard, an average, an approximation of 0.0165.
A. Correct.
Q. You're not counting the alcohol coming in.
A. The only alcohol that I'm aware of that he said that was consumed was a 12-ounce.
Q. In my hypothetical though if he had the two Icehouses that would totally contradict everything that you have there.
A. No. It would change it but it wouldn't totally contradict it.
Q. But in your testimony you stated that those two alcoholic beverages would have caused approximately .141 alcohol content to come in, as well as any elimination coming out at this time, he tested between .11 and 14 that night, is that fair?

A. Are you talking about the Alcosensor result? Again, those results are not necessarily, and I would not expect them to be reflective because of sampling error. It's, Alcosensors are used as screening devices and not as evidentiary devices. That's why we have to test them on the Intoxilyzer.

Q. Mr. Bombard could have peaked, total alcohol concentration, peak alcohol concentration at 1:47 a.m. You don't know that?

A. Well, again, we don't know what he drank and when he drank it. We only know at this point what he told the trooper he drank.

Q. Well, we all know, you know that if he said he had three beers it would not have registered a .14 in your opinion, correct?

A. Correct.

Q. So obviously that wasn't accurate information that he gave the officer, is that correct?

A. That's correct.

Q. Were you here yesterday during the testimony?

A. Yes, I was.

Q. And you heard the officer testify that routinely he is told I've had one or two beers no matter how many they've had. Did you hear that?

A. I heard that.

Q. In your experience have you heard the same thing with law enforcement officers?
A. I've heard that. I've heard people who blow 18 say they do not drink alcohol at all, too.
Q. So you can't base everything off what he tells you, the defendant tells you, can you? With your scientific application you're basing science off of what they told you.
A. At this point that's the only thing that I've been told that was said at that time.
Q. You're not aware of what Mr. Bombard had on his stomach that night when he drank the alcohol or anything like that?
A. No. That was his statement that he ate earlier, ate before 9 o'clock, had his two beers with supper, I believe, before 9 o'clock at the club.
Q. Would it be a correct statement that blood alcohol concentration is not predictable when absorption is still occurring?
A. But it's not -- the blood alcohol --
Q. The blood alcohol concentration --
A. Correct.
Q. -- is not (inaudible), is that correct?
A. Right.
Q. And the way it's consumed causes it to be absorbed

differently, high rate, low rate?

A. I don't, I'm not aware of studies where there have been, where that's a significant issue.

Q. If I had a statement that during the absorption phase the blood alcohol concentration may be much lower when the alcohol is drunk rapidly, it is not valid to extrapolate back that the absorption phase would subsequently (inaudible), would that be incorrect?

A. I need to read what you just read.

Q. Okay.

MR. MILLER: May I approach the witness?

THE COURT: Yes.

A. This statement deals with alcohol taken with food and the fact that with food, if you drink on an empty stomach you will see a sharp peak. If you drink with food you see a more rounded peak because the food is retarding it going in. However, these are studies that were conducted at concentrations of .04, .05, so the application of those to higher alcohol concentrations there's nothing that's been shown that applies in high alcohol concentrations.

Q. Would it be a fair and accurate statement to make that in this case if it actually occurred before Mr. Bombard's blood completely absorbed all the alcohol in his system that your retrograde extrapolation result is wrong? I guess I'm going back to the same question I asked you

over and over. You've got to know where the peak was for this formula to work. You've got to pick a point?

A. To have an exact concentration of a time at the crash the more information the better. Was it higher then than it was at the time he was tested? I don't think there's any dispute with that. You're getting into whether it was 16 then or 15. I'd say it's a small point.

Q. You weren't there to physically examine Mr. Bombard?

A. No.

Q. Any the information that you got is from the trial here today, is that correct?

A. That's correct.

Q. And you didn't witness him drinking, you don't know what he was drinking?

A. That's correct.

Q. You can't testify to what he drank?

A. That's correct.

MR. MILLER: Just a moment, Your Honor.

Q. Would it be fair and accurate to say that the only way to really ascertain what his elimination rate is is to have blood tests at hourly spaces to find specifically what his elimination rate is, is that correct?

A. To, yeah, we could do it that way, take multiple measurements, either breath or a blood test, we could determine his rate of elimination.

Q. In this case we only have one that you say is accurate, .14 on the Intoxilyzer.
A. I'm saying that that result is certainly an accurate reflection of his breath alcohol concentration at the time that he was tested.
Q. In that test why is it even asked if people have dentures if it doesn't make any difference? Why is it included?
A. The AIR form was developed probably 20 years ago and it's a highway patrol form. The original form had its foundations from, I believe, a traffic school that the Northwest Traffic School originally came up with the report form. Highway patrol adopted it. It is not our form. We didn't, we weren't consulted when they put the business on about do you have a glass eye, do you have a wooden leg, do you have false teeth. And so it is not an issue. In reality it's more an inventory on the individual.
Q. You heard Trooper Cook state the machine automatically tests itself, makes sure it's operating correctly, it takes care of itself, it's basically computerized, is that correct?
A. It is an automated instrument. It has a program that's in an erasable programmable chip. This program is checked through what we call a check sum. When the instrument is turned on it goes through a diagnostic to see

if the instrument is working properly. Before you can even run a test it does an air blank to see if there is any alcohol in the room air. It does a calibration verification by pumping alcohol vapor through the instrument. That does not calibrate the instrument. The instrument is calibrated electronically in an electronic lab. This is merely a verification of its calibration.

Q. Is it true and accurate that the machine is actually maintained, I guess, over the internet through connections?

A. No, it is not maintained over the internet through a connection. Data is downloaded over the phone lines but we do not do the maintenance. We have actual human beings who come to the test site. They have to do preventative maintenance on it. On the instrument every hundred, every four months, on the alcohol breath simulator they have to change that solution after 125 tests or four months, whichever occurs first, and that's done by humans.

Q. Is your testimony here today there is no way that the Intoxilyzer 5000 could have an incorrect reading, it's foolproof?

A. I have not seen a result on an individual where they were alcohol free and it gave an alcohol reading on the instrument.

Q. And can you state beyond a doubt that Mr. Bombard's blood level was not going up at the time of either the

arrest or at the time of the Intoxilyzer reading?
A. Based on the information I have it would be my opinion that it was certainly not going up at the time that he was tested on the Intoxilyzer and it would also be my opinion that at the time he was tested on the Alcosensor that it was not going up.
Q. Could he have peaked at the time of the Intoxilyzer?
A. In my opinion, no.
Q. You base this upon his testimony of what, his testimony of what the officer said was his statement of one 12-ounce beer?
A. The information that's been, that was, that's been testified to by the trooper.
Q. That's what you're basing these opinions on, correct?
A. Yes.
Q. Not the test results, just that information?
A. Correct.
MR. MILLER: Can I have one minute, Your Honor?
THE COURT: Yes, sir.
Q. You said this is an average so this could not be what Mr. Bombard had actually, even using your evidence, this could not be what his actual blood alcohol content was because it's an average?
A. Which --
Q. You used this average number of .0165?

A. As a rate of elimination, not as an alcohol concentration.

Q. Correct. But you used that to tell the jury what an alcohol concentration was, correct?

A. To calculate what it would have been at an earlier time and truncated the value that I got from that, which actually makes the rate that I actually applied to the graph there to get the .16 be a .0133 which is at the very bottom end of credible rates of elimination.

Q. You do not know personally how much alcohol was consumed by Mr. Bombard?

MS. HUGHES: Objection. Asked and answered.

THE COURT: Sustained to that.

Q. When did you review these results and do your compilations?

A. Different times. I don't remember when I was first subpoenaed for this case. It's been, I'm going to say six months ago. So off and on over the past six months.

Q. And you were supplied all of this data that you've gotten on the initial time or did you get any additional data or did you find any additional data, research any? Did you try to find any additional data about Mr. Bombard?

A. Did I find out more about him?

Q. Other than what the district attorney and trooper gave you.

A. No.
Q. Do you have any additional information that would help?
A. Other additional information about him?
Q. About him.
A. Would there have been? I don't think there's any factual information that would have been available that would have helped.
Q. Normally in science isn't it unacceptable to extrapolate to a single number? Isn't it normally a range?
A. You can do a range and I'm more than willing to do a range. This puts the value at the very bottom end of the range. To do a range then I would have to use the rate of .03, apply that, and add an 09 to the 12 to make it a 21. So that would --
Q. You also used 0.01.
A. Excuse me?
Q. You used a .01, too, didn't you?
A. The credible one is going to be about .012. That would -- three times that is going to be 036. So we would add a 03, so we'd be looking at a 15 for a low end.

MR. MILLER: That's all I have, Your Honor.

THE COURT: Redirect?

Redirect Examination by Ms. Hughes:

Q. Mr. Glover, if the defendant stopped drinking at 9

o'clock like the trooper testified that he had told him, how many beers would he have to consume within that time to have an Intoxilyzer result of .14 at the time of the test?

A. If his last beer was at 9 o'clock?

Q. Yes, sir.

A. And how much was consumed prior to that to then be a 14 at the time of the test?

Q. According to the same facts that the trooper testified to, the two beers at the Moose Lodge, stopped at 9 o'clock, how many would he have to consume after the wreck to be a .14 at the time of the Intoxilyzer exam?

A. Well, I have to have -- one more time.

Q. Okay. According to what the trooper said when he testified he said that the defendant told him that he stopped drinking at 9 o'clock.

A. Correct.

Q. That he had had the two beers at the Moose Lodge.

A. Right.

Q. And that he had drank the one beer after and then we have the results of .14. My question to you is if in fact he did drink the two beers at the Moose Lodge, stopped at 9 o'clock, how many more beers would he have to consume after that amount of time to get his level to a .14 at the time of the test?

A. Well, we would look at six to give you the .14 and

then one per hour for elimination from 9 until 1:45. So you're going to add, it's going to be nine or ten, I believe, just right off the top of my head.

Q. So at a conservative end approximately nine beers would have to be consumed after the wreck to get him to the 14?

A. Right, because we have to deal with the whole window of elimination, and assuming that those two beers that he had at the Moose Lodge, not even eliminating those, same beer there at the time, 9 o'clock.

Q. So if the statement that the trooper said the defendant made to him that he actually stopped at 9 o'clock and that he had some more alcohol and stopped that at 11 o'clock and that's after the wreck, he would have had to drink those approximate nine beers within that 15-minute period?

A. Yes.

MS. HUGHES: No further questions.

THE COURT: Any redirect, I mean, any recross?

MR. MILLER: No, Your Honor.

THE COURT: Okay, thank you, Mr. Glover.

* * * * * * * * * * * * *

END OF TRANSCRIPT

* * * * * * * * * * * * *

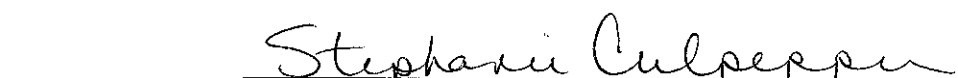
CERTIFICATE

STATE OF NORTH CAROLINA)

COUNTY OF IREDELL)

I, Stephanie W. Culpepper, the officer before whom the foregoing proceeding was taken, do hereby certify that the foregoing 64 pages, inclusive, are a true, correct and verbatim transcript of said proceeding.

I further certify that I am neither counsel for, related to, nor employed by any of the parties to the action in which this proceeding was heard; and further, that I am not a relative or employee of any attorney or counsel employed by the parties thereto, and am not financially or otherwise interested in the outcome of the action.



Stephanie W. Culpepper, CVR-CM
Official Court Reporter
P. O. Box 70
Concord, NC 28026-0070
(704) 786-4138