IN THE TENTH JUDICIAL CIRCUIT OF THE STATE OF ILLINOIS

PEORIA COUNTY, ILLINOIS

THE PEOPLE OF THE STATE OF ILLINOIS,	)	
Plaintiffs,	)	
v.	)	Case No. 02-CF-581
JOANNE MCKOWN,	)	
Defendant.	)	

FRYE HEARING

REPORT OF PROCEEDINGS of the hearing had before the **HONORABLE MICHAEL E. BRANDT**, Judge of said Court, on the 5th of March, 2007.

APPEARANCES:

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REPORTED BY: Michelle Farney, CSR-RPR
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THE COURT: Please remain seated. Ready to proceed, counsel?

MR. UPHOFF: If we could have just a moment while I speak with defense counsel.

THE COURT: All right. This is 02-CF-581. State vs. Joanne McKown. We're in continuation of a *Frye* hearing in connection with the case. Counsel, for assistance of the reporter and myself again, please state your appearance for the record. Start with the State.

MR. UPHOFF: Your Honor, Seth Uphoff for the State. I will be joined by Dave Gast who is on his way here.

MR. MALONEY: My name is Edward Maloney. M-A-L-O-N-E-Y.

MR. RAMSELL: Donald Ramsell for defendant. R-A-M-S-E-L-L.

MR. RAMOS: Jason Ramos for defendant. R-A-M-O-S.

THE COURT: So Mr. Gast will be joining us here. Can we start without him?

MR. UPHOFF: Yes, we will. What I'm doing right now is we have materials that I'm separating out so defense can have their copy before we get started.

THE COURT: All right. Let me know when you're ready.

All right. Mr. Gast has joined us. Let me

know when you're ready.

Counsel ready?

MR. UPHOFF: State is ready. Your Honor, at this time, the State would call Dr. Karl Citek.

(Witness sworn.)

DR. KARL CITECK,

was called as a witness on behalf of People of the State of Illinois, after having first been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION BY

MR. UPHOFF

Q Good afternoon.

A Good afternoon.

Q Could you please introduce yourself to the Court and spell your name for the court reporter, please?

A My name is Karl Citek. K-A-R-L. C-I-T-E-K.

Q Dr. Citek, where are you from?

A I currently live in Oregon.

Q And what is your current occupation?

A I'm a professor of optometry at Pacific University College of Optometry in Forest Grove, Oregon.

Q Before we go any further, can you tell us the general difference between optometry and ophthalmology?

A As an optometrist -- well, I'll start with an ophthalmologist. Ophthalmologists are medical doctors that go through four, a regular four-year undergraduate program and then four years of medical school. Then an ophthalmologist typically will do a one to three-year residency in ophthalmology learning about diseases of the eye, how to do surgeries and things like that, and treat infections and things of that nature. Optometry also is a four-year program after undergraduate, but while we get the same training and the same expertise in learning about the anatomy and physiology of the eye and the body as a whole, we also learn about the function of the eyes, how the eyes work together and how the eyes work with the brain. That is an area of expertise that most ophthalmologists do not have.

MR. UPHOFF: Your Honor, may I approach?

THE COURT: Yes.

Q (By Mr. Uphoff) Dr. Citek, I'm now showing you what has been marked as People's Exhibit 2 for identification. Do you recognize that?

A Yes. It is a copy of my curriculum vitae.

Q And is that curriculum vitae current at this time?

A Well, it's very recent. I do have a slightly more current one.

Q Was this the most current version when it was

tendered to both the State and defense for discovery?

A Yes.

MR. UPHOFF: Your Honor, at this time, People would ask to admit People's Exhibit No. 2 in to evidence.

MR. RAMSELL: No objection.

THE COURT: Admitted.

(Whereupon the State's Exhibit No. 2 was admitted into evidence.)

Q So, Dr. Citek, you told us that you're an optometrist. What exactly is your educational background for that field?

A I have a Bachelor of Arts in Physics from Columbia University in New York. I have a Master of Science in Vision Science from State University of New York, College of Optometry. I have a PhD in Vision Science also from the State University of New York, College of Optometry, and Doctor of Optometry also from the State University of New York, College of Optometry.

Q You've, you started describing some of the differences between an ophthalmologist or an optometrist in terms of the two different fields. In terms of the educational studies, were there any differences that you didn't describe when you were going through it previously in

terms of the specific things that ophthalmologists would study versus optometrists?

A As far as background, I believe it's, it is similar, so learning about anatomy and physiology of the eye and of the body and how the eye relates to the body in that sense, those are going to be very similar between the two. But then it's dealing with visual function, visual perception, how the eyes work together, again, that is an understanding that most ophthalmologists do not have.

Q During the course of your education, did you learn about nystagmus?

A Yes.

Q Did you learn about the different forms of nystagmus?

A Yes.

Q The different causes?

A Yes.

Q And you stated that you have your doctorate in Vision Science. Are you licensed to practice in the field of optometry?

A Yes, I am.

Q What states?

A I hold a current license with advance therapeutic privileges in Oregon and an inactive license in New York. The

only reason it is inactive is because I'm no longer a New York resident.

Q Where are you currently employed?

A At Pacific University.

Q Can you tell us some of your duties there in your employment?

A I teach courses. My current course is the first part of the physiological optic sequence. In the fall, I'll be teaching ophthalmic optics. In the summer, I'll be teaching an environmental vision course. I've also taught courses in perception and filled in for other instructors as needed. I also supervise interns in the clinic so I see patients both on my own and with my interns. Both in the local vision clinic and in the primary care clinic.

Q So you see some of your own patients as well?

A As part of that clinic, yes.

Q Do you conduct research through your position with the university?

A Yes, I do.

Q And do you have any other academic affiliations?

A I'm adjunct faculty at the University of North Florida. I teach a course for the, for IPTM, the International -- I was just blank there.

Q Is that International Police Management Technology?

A Technology and Management. I'm sorry. International Police Technology and Management School. I teach a course on medical foundations visual systems testing for them.

Q Are there any other professional activities that you're involved in?

A I have been past president of our local optometric society. Also of the Optometrical Society of America. I review papers for peer review journals. Also, associate editor for the Optometry Journal.

Q Some of your professional associations?

A I'm a fellow of the American Academy of Optometry. Member of the American Optometric Association. Member of the Association For Research and Vision and Ophthalmology. Member of the Optical Society of America and our local state organization, the Oregon Optometric Physicians Association.

Q Have you won any awards related to your profession?

A Actually, specifically related to training officers, yes. I won a regional award from the Oregon Multi-Disciplinary Task Force at their annual conference as trainer of the year in the field of DUI training, driving under the influence training. I've also received a national award, actually be international, couple years ago from the International Association of Chiefs of Police in combination

with Citizens Against Drug Impaired Driving. CADID for short. So, trainer of the year.

Q In your profession, do you have, have you worked on any patents or do you have any patents in your name?

A Yes.

Q What are those for?

A The ones that I have issued so far are for nonprescription, two of them are for nonprescription eyewear for the optics, relating to those. Two are for tints for specific uses and one is for a safety goggle.

Q All right. Now I'd like to talk about some of your experience that relates a little more directly to what we're here for today. Are you familiar with the standardized field sobriety tests?

A Yes, I am.

Q How are you familiar with those?

A I have read about them. I have participated in trainings. I've observed trainings and I've even helped teach them.

Q And are you also familiar with the Drug Recognition Expert Program? The DRE program?

A Yes, I am.

Q And does that program include the administration of what is known as the horizontal gaze nystagmus test?

A Yes, it does.

Q Have you instructed others in the DRE program as you have with the standardized field sobriety tests?

A Yes. For the last several years, I've been an instructor at that Oregon and Washington DRE schools when they held them for the new officers that will be becoming DREs.

Q Do you instruct specifically in the HGN test?

A Yes.

Q And you stated I believe earlier that you've seen this test administered. Have you seen members of law enforcement administering the HGN test?

A Yes, I have.

Q In what types of settings have you observed them administering these tests?

A In controlled conditions such as alcohol workshops as I refer to when the officers are learning how to use a test. I've also observed them at a roadside and in jails.

Q During any of those times, did you have the opportunity to administer the HGN test in the field alongside those members of law enforcement?

A Actually once I did. I was doing a ride-along with California highway patrol in San Diego and it was very, very late at night. Very early in the morning. We stopped a carload of individuals. The officers I was riding with tested

the driver and they offered to me to test one of the passengers to see if he might be sober enough to drive a vehicle home. My assessment of using the test was that he probably was not. That was confirmed with a PBT, portable breath test, afterwards, after I had done my testing.

Q So you have had some experience then in the field alongside the law enforcement officers?

A Yes.

Q And through your clinical experience and your field experience, how many times would you estimate that you've administered the HGN test?

A Dozens. Upwards of a hundred times. Maybe more.

Q During those experiences, have you administered the HGN test to individuals who you knew had not consumed any alcohol?

A Yes.

Q That was verified?

A Yes.

Q And on the flip side have you also administered the HGN test to people who have consumed alcohol?

A Yes. Actually, during any of the longer trainings that I do, the ones that go for three or four hours sometimes, certainly the IPTM course that lasts for three or four days, we usually incorporate a alcohol workshop as part of that. So

I insist that we have a live drinker and we test him beforehand and then we test him afterwards so that the students and attendees can see what the difference in the eye movement is.

Q I'd like to touch on some of your research and publications. Have you done research specifically on the horizontal gaze nystagmus?

A Yes.

Q Has that research included studying the effects that the consumption of alcohol has on the HGN?

A Yes.

Q And have your research and findings been published in peer reviewed publications?

A Yes.

MR. UPHOFF: May I approach, your Honor?

THE COURT: Yes.

Q Doctor, I'm now going to hand you what has been marked as People's Exhibits 3, 4, 5, and 6. Do you recognize those?

A Yes, I do.

Q Can you, starting with No. 3, can you please explain for us what those are?

A Exhibit 3 is -- make sure it is complete -- is a copy of the paper that was published in a peer review journal

based on my PhD thesis.

Q No. 4?

A No. 4 is a paper upon which I'm a coauthor with two of my colleagues and two members of Oregon State Police in which we reviewed the DRE program.

Q No. 5?

A No. 5 is a paper with, again, two of my colleagues and two members of the Oregon State Police in which we put the DRE program to the test. We used the face sheet data from the DRE program. Gave it to a number of officers without any additional information and asked them to determine, first of all, if the subject was impaired, and if so, what the impairing substance might be, what the impairing drug might be.

Q Lastly, No. 6.

A No. 6 is a paper that we published in 2003. This is with one of my colleagues, former student and member of Oregon State Police, in which we assessed horizontal gaze nystagmus and other eye movements in three different postures, standing, seated and laying down.

Q I'm now going to take those exhibits back from you.

MR. UPHOFF: Your Honor, People would move to introduce Exhibits 3, 4, 5 and 6 in to evidence.

MR. RAMSELL: No objection.

THE COURT: All admitted.

(Whereupon the State's Exhibit Nos. 3, 4, 5 and 6 were admitted into evidence.)

MR. UPHOFF: Your Honor, People have prepared a list of the numbers of the exhibits and their exact citations that we can provide to the court reporter after this hearing so the direct cites for these articles can be entered in to the record if that is acceptable.

THE COURT: All right.

Q Now, Dr. Citek, you have more than just those four articles, you've had more than just those four published, is that correct?

A Yes.

Q Would the others be listed along in your curriculum vitae?

A Yes.

Q Moving on, Doctor, have you ever been qualified by a court to testify as an expert in the field of optometry?

A Yes.

Q Have you been qualified by a court to testify as an expert in the administration and interpretation of standardized field sobriety tests?

A Yes.

Q Have you been qualified by a court to testify as an expert in the Drug Recognition Expert Program?

A Yes.

Q Have you ever been qualified by a court to testify as an expert on specifically the horizontal gaze nystagmus test?

A Yes.

Q Relating specifically to the horizontal gaze nystagmus test, in how many states have you testified as an expert on that issue?

A Well, actually I think that has come in to, in to all of my testimony even when we were discussing the DRE program. So it was part of, all of the testimony which I've listed there. I think there are 19 separate cases or hearings that I've listed.

Q Okay.

A In which I've testified.

Q And if you could estimate, or, if you know, how many of those times was the hearing being held to determine the admissibility of the HGN test?

A I don't recall. I have it listed on the CV as such. Probably --

Q It's listed in your CV?

A It's noted in the CV. Yes.

MR. UPHOFF: Your Honor, at this time I would tender Dr. Karl Citek as an expert in the field of optometry, the area of nystagmus and more specifically the area of horizontal gaze nystagmus.

THE COURT: Counsel, do you wish to question at this time?

MR. RAMSELL: Yes. Just briefly on the voir dire for the expertise.

THE COURT: You may do so.

CROSS-EXAMINATION BY

MR. RAMSELL

Q Dr. Citek, how are you today?

A Fine. Thank you.

Q My name is Don Ramsell. Okay. I'm looking at Page 1 of your CV. There's, the second category is called professional and work experience?

A Yes.

Q How come there is nothing about your professional or work experience listed there for the years between 1994 and the year 2006?

A It is there. It's, if you look at Pacific University, I started at Pacific University in December of 1994 immediately, just as I was finishing my PhD.

Q Oh, I see. It is here on the right.

A My duties did not change. I started as assistant professor in '94, was promoted and tenured in the year 2000 to associate professor, then promoted again to full professor in 2006.

Q All right. So then I can accurately gather from your experience that you've never actually been in a private practice in the field of optometry?

A Correct.

Q And, therefore, you've never had a set of patients?

A I've seen patients in our clinics, in the school clinics.

Q And just so I can get an accurate take on the difference between optometry and ophthalmology, because I don't wear glasses, an optometrist cannot perform surgery on the eyes?

A Correct.

Q An optometrist cannot repair an eye disorder; is that a fair statement?

A Well, if that repair required surgery, then no.

Q So you can't like give Lasik?

A Correct.

Q Can you administer medication?

A Yes.

Q Now, because I'm starting from zero, most commonly

people would find optometrists in places where they buy eye glasses?

A Yes.

Q And so if you went to a store that sells glasses, frequently the person that tests your vision is an optometrist?

A Most likely. Yes.

Q Hopefully. And then if that person has a problem other than with vision, like nearsighted or farsighted, does the optometrist then generally hand off that person to an ophthalmologist?

A If it were a condition that required surgery or that required an intervention that the optometrist could not legally perform, then, yes, a referral would be made.

Q Other than determining if somebody is nearsighted or farsighted, can an optometrist diagnose other conditions?

A Yes.

Q Then can they treat them?

A In many cases, yes.

Q All right. Now, an ophthalmologist goes to a medical school?

A Correct.

Q So, let's see. An ophthalmologist first attends a university, a standard university, four-year degree of some

form, yes?

A Yes.

Q Does the ophthalmologist have to have a degree in a particular area in order to enter medical school then, like biology or something, or can they have a criminal justice degree?

A It may depend on the medical school. I don't know about that.

Q An ophthalmologist generally has to take something called MCATs, M-C-A-T, to see if he can get in to medical school?

A Yes. That's getting in to medical school in the first place.

Q Does an optometrist have to go to a four-year school and get a bachelor degree of some kind before entering optometry?

A Yes.

Q Do they have a test they have to take to get in to optometry school?

A Yes.

Q The optometry school is how long?

A Four years.

Q The medical school is how long?

A Four years.

Q And then what, so the ophthalmologist is actually a doctor of medicine?

A Correct.

Q The optometrist is considered what, doctor of optometry?

A Correct.

Q Then what happens after that stage? Where does the separation occur beyond that? Does the ophthalmologist have to do more in order to practice?

A Well, generally the ophthalmologist after completing the four years of medical school is a medical doctor at which point he can do, he or she, can do anything, can go in any direction. That's where he or she typically does a residency in the field that he is interested in. So happens to be ophthalmology or cardiac or gastrointestinal or anything like that, that comes typically after school. If they want to do just internal medicine or primary care or anything like that, they'll do that as a residency after the four years of medical school.

Q So after medical school, does the ophthalmologist in order to become a ophthalmologist have to go through further education?

A Right. That's what I testified is typically one to three years.

Q Whereas the optometrist is already in that stage, in the same number of years, already able to practice in that field?

A Correct.

Q Okay. Now, nystagmus, as an optometrist, that is something you could diagnose? You can say I see nystagmus, right?

A Yes.

Q But it's something you couldn't fix? Like there's a problem with the vestibular muscles that need repair, you couldn't fix nystagmus, but you could diagnose it or identify it? Is that a fair statement?

A In many cases, because we're talking about nystagmus, in many cases even an ophthalmologist couldn't do or any other doctor very well couldn't do anything about it either.

Q Let me put it this way: If there were 47 causes of nystagmus, which of those causes would you, as an optometrist, have the qualifications, legal and medically, to repair? Any?

A Actually a couple of my patients with congenital nystagmus we have fitted them with contact lenses and that has reduced their nystagmus.

Q Other then assigning contact lenses, any other medical techniques you're qualified and licensed to perform?

A No.

Q An ophthalmologist, on the other hand, would that person be qualified and licensed to perform whatever techniques might be able to fix nystagmus besides --

A Not necessarily.

Q Could an ophthalmologist issue contact lenses?

A Yes.

Q In your professional activities on Page 2 you did not list the years that you became members of these societies. Was that an oversight or you just didn't feel it was necessary?

A I didn't feel it was necessary.

Q Were you a member of the American Optometric Association in 1993 when that resolution was passed?

A Yes, I was.

Q Did you have anything to do with that resolution?

A Not directly. No.

Q Well, what do you mean? Indirectly you did?

A No. I mean, I knew the individuals, but, who were --

Q Let me just repeat it. Did you have anything to do with the passing of that resolution directly or indirectly other than knowing the people?

A No, I did not.

Q You also have testified on the issues of nystagmus in a case, *State vs. Coberly*, C-O-B-E-R-L-Y, in Kansas?

A Yes.

Q Is that listed in your CV?

A Yes, it is.

Q And also in Nebraska. What was the name of that case?

A There were three in Nebraska. If you look at my CV, they're all listed there.

Q Which is the one where Ms. Hagerty and Mr. Jorgensen were involved?

A That was probably the last one. The most recent one.

Q The name of that case is?

A I'd have to look at my CV. I don't recall.

Q You also belong to a list serve where you contribute your thoughts or comments called, bear with me, Impaired Driving Forum at Yahoo Groups dot com?

A Yes.

Q Okay. Good. I was kind of doing two things at once here so forgive me if I'm asking you to repeat. How many times have you actually given an HGN test in the field?

A In the field actually?

Q Yes.

A Once.

Q Other than that, have the remaining HGN tests that you yourself personally have performed all occurred in laboratories or alcohol workshops? Controlled environments in other words?

A In a controlled environment of some sort. Yes. In a training situation of some sort.

Q In terms of your studies, have you ever conducted baseline studies on individuals that suffered from other known causes of nystagmus?

A No.

Q All right. So just so I can kind of wrap this up, you've mentioned in some of your other works, 47, at least 47 causes of nystagmus in the published world?

A Correct.

Q The only nystagmus study you've actually personally been involved with has been studies related to alcohol caused nystagmus, right?

A Where I've actually assessed the subjects and dealt with that?

Q Yes.

A Yes.

Q So you don't have, you've done no personal studies about diabetic caused nystagmus or glaucoma caused nystagmus

or any of the other 46 --

A Right.

Q -- recognized causes that you acknowledge?

A Well, I would not and I don't think any medical professional would recognize diabetic caused nystagmus or glaucoma caused nystagmus.

Q You've done no other nystagmus studies on other known causes recognized by other studies or peer reviewed articles?

A Well, keep in mind that --

Q Yes or no?

THE WITNESS: Your Honor, I need to qualify the answer, please.

THE COURT: You may answer. If it's nonresponsive, you can move to strike. Go ahead and answer.

A Within the studies in which we look at alcohol effects, we also look at environmental effects, environmental conditions that cause nystagmus. Of the 47 odd types, however many there are that you mentioned, many of those are caused by environmental conditions. So, yes, I have looked at certain conditions that normal individuals might exhibit, even if they're sober, where they might exhibit nystagmus.

Q All right. Now, in your actual practice in your clinics where you've seen some patients, if you will, have you

ever given them an HGN test as a part of your protocol?

A Not in the way that the police officers do. No.

Q So have you ever used the police test, if you will, of HGN in your actual practice for the purpose of optometry?

A No.

MR. RAMSELL: That's all I'm going to ask on the qualifications of the witness.

THE COURT: All right. You may continue.

MR. UPHOFF: Just to clarify, I would, again, re-tender Dr. Citek in the field of optometry and the area of nystagmus -- excuse me, I'll say that one more time. I would tender Dr. Karl Citek as an expert in the field of optometry, the area of nystagmus and more specifically in the area of horizontal gaze nystagmus.

THE COURT: You may continue to examine.

REDIRECT EXAMINATION BY

MR. UPHOFF

Q Now, Doctor, you're familiar with basic movements of the eye, correct?

A Yes.

Q You're familiar with nystagmus as we've been talking about, correct?

A Yes.

Q Can you explain for us what specifically nystagmus

is?

A The most general definition is that nystagmus is an involuntary repetitive movement of the eyes.

Q Can you explain for us what horizontal gaze nystagmus is?

A That is a name given to a series of tests that look at three different aspects, three different components of eye movements, three different types of eye movements with different directions of gaze.

Q And as you were asked earlier, you're familiar with the HGN test as it's used by law enforcement, correct?

A Yes.

Q Do you use similar types of tests in the field of optometry?

MR. RAMSELL: Objection to the word similar. Vague.

THE COURT: Overruled.

A We do test eye movements. We test them in a fashion similar to, not exactly the same as, but similar to the way it is done in the HGN test, and we may reach the same conclusion. We may get to the same place.

Q In your expertise in the field of optometry and being familiar with the HGN test, do some of the, do parts of the HGN test attempt to elicit results that you in optometry attempt to elicit when testing a subject?

A Yes.

Q Do you know, other than in optometry, do you know if the HGN test is used outside of the field of law enforcement?

A Yes. I'm familiar with, there is at least one company, I believe two, that advocate drug testing and other screening programs for the workplace environment for employees and one of the things that they advocate is --

MR. RAMSELL: I apologize. I need to interrupt here. If it is outside his field, then he is not qualified to speak on behalf of that company or repeat whatever they claim. They're not subject to cross and he has not laid a foundation as under *Wilson v. Clark* that it's something that he relies upon or the field of optometry relies upon. It is parroting some hearsay from a company.

MR. UPHOFF: Is that an objection?

MR. RAMSELL: Yes.

THE COURT: Overruled. You may continue to examine.

Q If you'd go ahead and finish then, Doctor, you were stating, I asked if you knew if the test was used outside the field of law enforcement. You are stating it is used --

A I'm aware it is used, as it and the other field sobriety tests are used, as non-evasive tests of workers to see if they might be impaired before they do an evasive test such as a urine test. It is also used in school programs by

school nurses and vice principals to see if school children might be impaired.

MR. RAMSELL: I apologize. I'm going to object again unless he provides specifics. There is one school in the world that uses it. It's not relevant. He's not telling us the degree it's used. It could be misleading.

THE COURT: Overruled. I'll let you cross naturally. Go ahead.

Q (By Mr. Uphoff) Now, earlier you described some of the differences between optometry and ophthalmology. With those differences in mind, in regards to the HGN test, in your opinion, would optometrists or ophthalmologists be more likely to be familiar with the scientific foundations of the test?

A Both would have an understanding of the background of the test and how the test works and why it would work, but I believe from a functional basis optometrists would have a better handle on it, better feel for the test.

Q Why is that?

A Because the eye movements will relate directly to driving, and we understand, we know that when nystagmus occurs because of an outside influence, a temporary or acquired outside influence, visual function is reduced. That will affect driving directly.

Q And to that end, have members in the field of

optometry taken a stance on the validity and reliability of the HGN test?

A Yes.

Q And what exactly is the American Optometric Association?

A It is an organization, I believe the current membership is about 34 or 35,000 doctors of optometry and some researchers as well throughout the U.S. and Canada and I believe there might be some international members. It is a professional organization which conducts annual meetings where there is continuing education done. There are newsletters. There, it has its own peer review journal. That's one that I'm an associate editor of. It performs other functions keeping optometry current with other professions.

Q And I think you stated earlier that you are a member of that association?

A Yes, I am.

MR. UPHOFF: Your Honor, if I could approach?

THE COURT: All right.

Q Dr. Citek, I'm now showing what you has been admitted into evidence as Defense Exhibit No. 3. Do you recognize that?

A Yes.

Q What is that?

A It's actually a copy of a page from a monograph to which I contributed several years back.

Q And what is contained on the first page of that document there?

A Within the box in the highlighted box is the resolution that was adopted in 1993 by the American Optometric Association regarding the validity and reliability of the HGN test.

Q Could you read that out loud for the Court, please.

THE COURT: I just got through reading it, but if you want to read it in for the record I guess you can.

Q If you could, read it in for the record, please.

A Yes. "Whereas drivers under the influence of alcohol pose a significant threat to the public health, safety and welfare, and whereas optometric scientists and the National Highway and Traffic Safety Administration have shown the horizontal gaze nystagmus, HGN test, to be a scientific and reliable tool for trained police officers to use in field sobriety testing, now, therefore, be it resolved that the American Optometric Association acknowledges the scientific validity and reliability of the HGN test as a field sobriety test when administered by properly trained and certified police officers, and be it further resolved that the American Optometric Association urges doctors of optometry to become

involved as professional consultants in the use of HGN field sobriety testing."

Q Do you agree with what is contained in that resolution?

A Yes, I do.

Q I'm also going to show you what has been marked as People's Exhibit No. 7 for identification. Do you recognize that?

A Yes, I do.

Q What is it?

A It is a letter from council to the American Optometric Association dated February 2, 2006, indicating that the resolution which I just read has been continued. That is, it is still in force and it is still maintained by the American Optometric Association.

Q Would it be referred to as an affirmation of that previous resolution?

A Yes. That is correct.

Q Is there a specific portion of that that has the language affirming the previous resolution?

A Yes.

Q Could you read that for us, please?

A Just that specific --

Q That portion.

A That would be the fourth paragraph in the body of the letter. "As required by the association's bylaws, all extent resolutions are reviewed for currency every five years. In the reviews conducted in the years 1995, 2000 and 2005, while many resolutions were modified or deleted, Resolution 1901, that is the resolution at hand, was continued by the house of delegates without change."

Q You'd agree with that affirmation?

A Yes, I do.

MR. UPHOFF: Your Honor, at this time, People move to admit People's Exhibit No. 7 for identification in to evidence.

MR. RAMSELL: No objection. But we don't stipulate to the validity of any of that. Just not objecting.

THE COURT: Admitted.

(Whereupon the State's Exhibit No. 7 was admitted into evidence.)

Q Doctor, I'll take that exhibit back from you. So, Dr. Citek, would you say that the HGN test is commonly accepted in the field of optometry as a scientifically valid and reliable tool to use in field sobriety testing?

A Yes.

Q And what is that acceptance based on?

A The typical optometrist's understanding of eye movements, eye function, visual function and especially as they relate to driving.

Q You told us earlier that you've conducted research on how the consumption of alcohol relates to horizontal gaze nystagmus. Do you have a power point presentation that can help you describe that relation in more detail?

A Yes.

Q I'm now showing you what has been marked as People's Exhibit 8A and 8B. Could you describe what those are?

A Those are two CDs that I had burned. I recognize them because the writing on the CD is mine. They have power point presentations and video images on them.

Q Would they, would the first CD, 8A, would that be the power point presentation?

A Yes.

Q Would the second part, 8B, would that be the video?

A Well, the videos are on 8A also in low resolution. The videos are available in high resolution on the second CD simply because everything couldn't fit on one CD. That's why I made two.

Q Are those, the things contained on those CDs, would they help you to demonstrate the basic movements of the eye and the effects the consumption of alcohol can have on that

eye movement?

A Yes.

Q You refer to those video clips. Are those videos shown in real time meaning they haven't been sped up or slowed down?

A Correct.

Q Do all of the videos and pictures fairly and accurately represent what you expect to see in the conditions and tests that you'll be describing?

A Yes.

MR. UPHOFF: Your Honor, at this time, the State would move to admit People's Exhibits 8A and 8B and ask that the doctor be allowed to use them to demonstrate his testimony?

THE COURT: Counsel?

MR. RAMSELL: No general objection. Subject to cross.

THE COURT: All right. You may present them.

Q (By Mr. Uphoff) Doctor, if you could go ahead and load up those CDs.

THE COURT: Let's discuss on the record something. As far as transcribing, then -- we'll go off the record for a minute.

(Whereupon, a discussion was

held between court and counsel off the record.)

THE COURT: Back on the record. We've discussed the presentation of the disks and the court reporter will be reporting what the witness actually says and nothing on the disks. 8A and 8B being admitted.

(Whereupon the State's Exhibit Nos. 8a and 8b were admitted into evidence.)

Q (By Mr. Uphoff) Dr. Citek, if you could, using the presentation, would you please explain some of the basic anatomy and physiology of the eye, the effect the consumption of alcohol can have on the eye and how those things relate to driving, and for the court reporter, could you please give a description of the slide you're referring to as you present these slides?

A Certainly. I'd also like to make the Court aware that the presentation that I'm using is just moderately, just absolutely slightly different than what I had originally provided to the State in that the slides are numbered and that one slide is moved from one position to a different position. So, if defense counsel already has that and viewed it, it's the entire presentation it's just in a slightly different order, but nothing else has changed except with the addition

of the slide numbers. Just want to make that clear.

Q With that in mind, could you please take us through this?

A Certainly. The first slide is just a general overview of the eye movement tests as police officers generally conduct them during a typical DUI investigation. The eye movement --

MR. RAMSELL: I apologize. I need to interrupt. The witness' statement that this is how the police conduct it during a regular investigation, there is not foundation for that yet. He's been on the road once.

MR. UPHOFF: He testified he trains law enforcement.

THE COURT: Objection overruled. You may continue.

A The eye movement test incorporates the horizontal gaze nystagmus which has several pretest components and then three actual subtests. During the pretest components, the officer checks for equal pupil sizes. These unequal pupil sizes may in some cases indicate a recent head injury such as trauma or a stroke. If that is not present, the pupil sizes are equal, then the officer can continue.

The officer also checks for equal tracking in which case he does a couple of quick passes of the stimulus in front of the suspect just to see that the eyes move together and they have full range of motion. Again, if the eyes do not

move together for whatever reason or if they don't have full range of motion, it may not be possible to do part of the testing.

Prior to starting the test itself, the officer will ask, typically ask the suspect about any eye conditions that he or she may have. Certainly, if the suspect is wearing glasses, he asks the suspect to remove them. That is not a critical failure. That is not a critical fault for the test because the test itself is not an acuity test. The stimulus that is used is fairly large and held fairly close. It can be a finger, pen cap or a pen point or a pen light, finger over a pen light. Anything like that. That is a fairly large stimulus. That does not need to be seen clearly in order to allow the test to be performed correctly.

The main reason that the officer asks the suspect to remove the glasses is so the officer can have a better view of the suspect's eyes. There have actually been cases, situations where suspects have been adamant and have requested to keep their glasses on otherwise they would not do the testing and the officer was still able to do the testing properly.

MR. RAMSELL: Judge, I apologize. I don't want to be disruptive, but, I don't mind if the witness is going to educate the judge on the theories behind the testing, et

cetera, but I'd ask he be restricted from offering anecdotal stories of what has happened on the street with particular police officers. It's beyond his position as educator here as opposed to repeating anecdotal stories that he might have heard over a cocktail.

THE COURT: We'll show your continuing objection of that portion of the testimony. The Court will allow it and noting it's particular source and the knowledge of the witness in obtaining that information. So you may continue to examine.

Q So you were, I believe, referring to eye glasses. What about contact lenses?

A The suspect is asked if he or she is wearing contact lenses. And just as a matter of record, in the old days when the only types of contact lenses that were available were hard lenses, those would sometimes have a tendency to fall out when the eyes were brought to an extreme lateral gaze position. They might have a tendency to pop out because of their size. It still happens now. So about 10 percent of the patients who wear contact lenses have rigid lenses. That is still a possibility.

Soft lenses, soft contact lenses, which make up the majority of contact lens wearing public, those are typically larger, much much larger than the rigid lenses and

they will cover the cornea, the front of the eye completely. They have almost no possibility of falling out or anything bad happening to them if they were fit properly to begin with. So, at this point, for a historical matter, if nothing else, the administration still has, the administration of the test, the protocol still requires the officer to ask if the suspect is wearing contact lenses, but then it is just noted. There's no other further action taken based on that.

Actually, in that case, if I may say, as I've already testified previously with contact lenses and nystagmus, that would only go, and I've seen it occur on a couple of instances with some of our subjects in our alcohol workshops, it actually goes to reduce any nystagmus that the subject might have.

Q The contact lens?

A Presence of a contact lens.

Q Can reduce the amount of nystagmus?

A Can reduce it. Yes.

Q So then after that point, after those preliminary questions, go ahead and proceed.

A So after the pretesting is done and everything is checked, the three subtests, the three subcomponents of the HGN test are in order, lack of smooth pursuit, distinct and sustained nystagmus at maximum deviation and then onset of

nystagmus prior to 45 degrees. They're done in that order and it's required that they be done in that order because that is the order in which the clues will appear, those signs will appear with increasing levels of intoxication if we're talking about alcohol intoxication.

Each of those clues is assessed twice for each eye, and in the training that I have conducted and where I've supervised officers and advised them on how to do this, I will typically tell them that if they miss a clue, if they don't, if they think they saw a clue, but they're not sure, then they really didn't see it. They would need to check it at least once more to verify that either it was there or it was not there. So all of these clues, when they are present, are going to be very obvious to the trained officer. And if he has to imagine that he saw a clue, then he is taught, he or she is taught it was not there.

The last component, the eye movement tests that are typically conducted in a non DRE investigation, is a vertical gaze nystagmus and that is a test and that is going to be a separate evaluation of the eyes of the effects of alcohol on the eyes.

Q So you described to us how the eye movement test works. What is the next slide that you have?

A I'd like to discuss a little bit about the basic

anatomy and physiology of the eyes and then the nervous system that controls the eyes. So the diagram here, the cartoon drawing is of an eyeball with the six eye muscles around it. This is Slide No. 2. The boxes with the names cornea, iris and pupil, and conjunctiva and sclera point to the significant anatomical structures that are easily observed at the front of the eye.

The cornea is the clear window at the front of the eye. Behind it is the colored part of the eye, the iris. The opening within the iris is the pupil. It typically looks dark under normal circumstances. The sclera is the white of the eye outside of the cornea. Conjunctiva is a thin clear membrane that covers the sclera that has a firm attachment around the cornea and extends to the, to the inside of the upper and the lower lids.

Moving on to Slide 3, here I've listed the names of the six extraocular muscles. These are the muscles that allow the eye to move independently of the head, separately from the head. The two horizontal muscles, the medial and lateral rectus, are primarily involved with moving the eye side to side, left to right. There are two muscles at the top, the superior rectus and superior oblique, and also two muscles that attach at the bottom of the eye, the inferior rectus and the inferior oblique. One of the muscles on the

top and one on the bottom help the eye to move up. One muscle at the top and at the bottom also allow the eye to move down. These muscles all work as antagonistic pairs which means if one muscle contracts to pull the eye in one direction, then its opposite muscle, its antagonist must relax otherwise the eye is not going to go anywhere. If both muscles at the top of the eye contract with the two at the bottom relaxing, then the eye can actually rotate slightly with the top of the eye rotating in towards the nose.

If both muscles at the bottom of the eye rotate, contract, then the eye will rotate out away from the nose. So there are a whole hosts of movements available of the eye separate from the head, independent of the head or with respect to the head, both side to side, up and down, any combination of that and even the slight rotational movements of the eye.

Moving on to the basics of the central nervous system, the diagram here is a section of an actual human brain. On the left side is the frontal lobe. On the right side of the picture, right above where it says cerebellum, is the visual cortex. That is the area where, of the brain where visual information is processed once it gets in to the brain. The brain itself, the brain matter, excuse me, gray matter of the brain is called the cerebrum or the cortex. It can be

divided in to, in a couple different ways. The simplest division is you go straight down the middle from the top down almost to the bottom. Everything to the right of that is involved with processing sensory information, vision, hearing, smell, taste, touch, all of that. And it's starting to integrate that information. Everything to the left of that center, the forward part of the brain, is involved with voluntary motor movements, behavior and other aspects like that.

The other two main parts of the central nervous system are the cerebellum and the brain stem. The cerebellum is involved with coordinating, coordinating inputs from different sensory systems and also allowing for coordinated muscle movements and fine motor control. The brain stem forms the top of the spinal column. There are actually multiple components to it. I don't think we need to get into that here. We can keep it relatively simple. But there are 12 nerve centers. Twelve pairs of nerve centers in the brain stem that control our basic life functions, basic body functions and life functions. Everything from our heart rate and our breathing to the first stop as an input, the first input for information from the sense organs such as the eyes, the ears. The stimulus system for balance. Taste. Touch.

And there's also some nerve centers that send

out fibers to very specific muscles that are, that we think are involved in basic life support. The muscles of the tongue are controlled from these nerve centers as are the muscles of the eyes.

So 3 of the 12 pairs of nerve centers in the brain stem control the muscles in and around the eye. That is their sole function. Actually two of those control only one muscle each. So, in terms of a basic life support system, an important system for our functioning, vision is critical. Vision is critical. This is how we take most of our information in to our bodies so we can understand what is going on in the world.

The key thing with intoxication and the effects of intoxication that we see in terms of eye movements and other possible physiological changes --

MR. MALONEY: I'm going to object. At this point, there is no question pending. We're getting narrative.

THE COURT: Sustained.

Q So how is it that the central nervous system is important to eye function and how is it affected by the consumption of alcohol?

A Alcohol will effect how the nerves within the cerebellum and within the brain stem talk to each other. That's a basic way of putting it. I'm not a neurologist. I

don't know the basics of the neurology and exactly which neurotransmitters are effected, but from a functional basis, the functioning of the cerebellum, the functioning of the brain stem are disrupted to the point where they're not, they produce, in this case, eye movements that would not appear normal.

Q Is that ultimately what can present itself as nystagmus?

A Yes.

Q Is there anything else referring to Slide 4 that you'd like to inform us?

A No. Oh, except that as far as intoxication is concerned when we talk about this disruption --

MR. MALONEY: Objection again. This has nothing to do with Slide 4. He's going at it again in a different manner.

THE COURT: Overruled.

A On the question of how intoxication effects the central nervous system, those effects of disrupting how the nerves and the nerve centers in the cerebellum and brain stem function, those are completely involuntary. Those are not anything that was, not effects that are under voluntary control. So an individual who is intoxicated cannot avoid making those abnormal eye movements, if we're talking about

eye moments specifically.

So they're going to be very consistent effects that will be seen with intoxication and they will be consistent with the individual and also cross individuals. Some of them will be very common under those situations of intoxication.

Q All right. What is contained on Slide 5?

A Slide 5 shows a functional diagram, a couple of functional pictures of a model eye, schematic eye in the left hand, in the upper left-hand corner that shows in cut out form the cornea at the top and the retina at the bottom. The picture in the lower left-hand corner is actually a photo of a normal human retina. Something we take pictures of all the time and we view all the time in the course of our examinations.

What I'm, what I've overlaid on that with respect to that actual retinal photo of the approximate locations with respect to central vision, the box on the right-hand side says acuity is poor except at the fovea. So even though the entire fovea, the entire retina, excuse me, has photo receptors and can detect light and we have a full field of vision of greater than 140 or 150 degrees horizontally, only a very small part of that in the center of the retina is capable of distinguishing fine details and

seeing small objects and that is consistent with an anatomical area that we call the fovea. So, when we say someone has a particular acuity, usually we're talking about the visual acuity at that portion of the retina. What I've listed there for the different anatomical positions at the fovea, someone may have normal visual acuity, which, we define that as 20/20. As little as five degrees away from the fovea, from the center of that, the acuity drops to one-third of that level or 20/60. Ten degrees away it drops to 20/100. Twenty degrees away it would be 20/200. Those are typical values. Those are well understood values.

Functionally what that means, if you want to look at something, if you want to see the small details of an object, you need to move your eyes so that your fovea is consistent with that object so the image of that object lands on the fovea. Otherwise, you're going to have a difficult time seeing those small details. By analogy, a very simple experiment that anyone can try, if you watch any of the T.V. channels, sports channel or news channel that has a ticker running across the bottom, if you look at the top or even the center of the screen, you might see the movement of the words along the bottom on the ticker, but you're not going to be able to read them until you move your eyes to that location. So with your periphery you can detect color movement, you can

detect movement, but you're not going to see fine details. In most cases, when we're interested in seeing fine details, we have to move our eyes such that our fovea lines up with the particular object that we're viewing.

Q So in order to have optimum visual acuity it is important to have the eye focus so that the fovea is receiving or is focusing on the image that we're trying to see?

A Correct.

Q Now, on to Slide 6.

A Slide 6 starts to describe some of the different types of eye movements. The simplest type of eye movement is a fixation, what we refer to as a fixation eye movement. It's almost an oxymoron because with fixation we assume the eye does not move. So it's a movement of zero velocity. By fixation, we specifically mean viewing a stationary object when the eye, and hopefully the head, also, are both stationary. So there is no relative movement between the eye and the object that the eye is viewing.

Q Is this now Slide 7?

A Slide 7 I define the first of the two major types of eye movements. If we want to move our eyes with respect to our heads, there are two types of movements we can make. The first one is the saccade. It is a fast re-fixation. So we voluntarily want to look from one location to another, that is

usually done with a saccade, usually accomplished with a saccade. The speed of the saccade can be upward of 300 degrees per second and there are some textbooks and some published papers that even cite higher values, 400 or even 600 degrees per second. But even at 300 degrees per second, we recognize that as a very fast eye movement. It is a very fast way of repositioning the eyes. Very efficient way of doing that.

What I've outlined in the photo on the bottom is the approximate field of view that the eyes have in this dynamic sense. If the eyes can move with respect to straight ahead, then moving from one side to the other, they cover an angle of about 60 degrees to either side or about 120 degrees total from one side to the other. To give you an idea of how fast re-fixation is as I define it here, as I describe it here, moving the eyes through the full extent, the 120 degrees, at a speed of 300 degrees per second, would take less than half a second to accomplish. That takes exactly four-tenths of a second. So that is a fast eye movement. To make that large of an eye movement can be done very quickly.

Saccades, of course, can also be much slower. Can also be slower and also much smaller. So there is no requirement that they need to go for the full distance.

Q Is this now Slide 8?

A Yes. I do apologize. I hit that too soon. Go back for one second. Back to Slide 7. One important thing about saccades is that when a saccade occurs, during that rapid movement, the brain actually shuts down processing the visual information. That is called suppression. That avoids the appearance of a smeared or blurry image on the retina. If that were to occur, then you would not feel comfortable. You would not, it just would not feel like normal vision. So, to avoid that, the brain actually shuts down normal processing during a saccade and then starts processing and takes in information again as soon as the eye stops moving.

Q Would that be similar, I guess, to say a digital camera that now has a view screen? If a person moves the camera too quickly, it will cause the blurring and smearing. Is that similar to what you're referring to?

A Correct.

Q So the saccades prevent the brain from seeing that blurring and smearing?

A Well, the suppression during the saccade prevents the, prevents the perception of that blurring or smearing.

THE COURT: All right. Before we go to the next slide, we'll take a little recess, allow everyone to stretch, et cetera. The witness may step down during our recess. Ten minutes.

(Whereupon, the Court had a brief recess.)

THE COURT: Please remain seat. All right. We're back on the record. You may continue the examination.

Q (By Mr. Uphoff) I believe when we left off, Dr. Citek, you were moving on to the next slide.

A That would be Slide No. 8.

Q If you could pick up there?

A So the other type of, the type of eye movement, moving the eyes separately, independently from the head, is called smooth pursuit movements. These involve fixation of a moving object. So whenever there is relative motion between the observer and the object, the smooth pursuit type of eye movement will be initiated. Now, smooth pursuits are going to only occur at speeds much slower than saccades. The most recent data, the more recent data that was published over the last 30, 40 years suggests that normal, physiologically normal sober individual can make smooth pursuit movements of speeds up to, between 100 and 120 degrees per second.

So going back to the, going back to the previous slide, it is on the next slide, Slide No. 9, the 120 degrees, if we moved at 120 degrees per 120 degree visual field, if we move at 120 degrees per second, that would mean the object is going across the visual field within the space

of one second. Now, beyond 120 degrees just about everyone can no longer use smooth pursuit so they must make the faster eye movements, the saccades. Even at 100 degrees per second, almost two-thirds of normal individuals, about 60 percent, can move that quickly. Yet, if the stimulus were slowed down to about 30 degrees per second, then every normal sober individual would be able to follow at that speed.

What that represents, now coming back to, coming back to the picture with the eye movements, that represents four seconds of movement for 120 degrees or two seconds going from the center of vision from the midline out to the side 60 degrees at 30 degrees per second. During the test, during the test protocol for lack of smooth pursuit, the tolerance that the officer has is in making the full pass from one extreme, one lateral extreme to the other. He can make that in four seconds plus or minus one second. In angular speed, that translates to a angular speed as slow as 24 degrees per second and as fast as 40 degrees per second.

That is not a fatal error. That is not a fatal mistake. Ideally it should be at about four seconds to cover that 120 degrees, but it can be slightly slower, slightly faster and it would still demonstrate smooth pursuits or lack thereof.

Q And that would be the first part of what is

typically known as the HGN test?

A Correct.

Q Now, starting with Slide 10, I have a picture that was taken within my vehicle. I was driving. My wife was behind me over my shoulder shooting the scene out the window, out the front window just to demonstrate typical posture in a typical vehicle with seeing road signs, seeing other cars on the road and seeing rearview mirrors and such. Smooth pursuits are going to be used in scanning the roadway, in scanning for obstructions as you move along. You recall for smooth pursuits to be in effect there's relative movement between the observer and the object being observed.

So even a stationary sign, as you're driving past it, would initiate a smooth pursuit movement if you tried to read the sign, if you tried to look at it. Likewise, vehicles in oncoming lanes or in crossing streets, if you tried to follow them, if you tried to look at them directly as you're following them, you're using smooth pursuit movements. If the smooth pursuit movements are disrupted, if they're not, if they're not possible, you can't make them, then you must make the saccades.

The problem with saccades, again, is that during the fast movement, during that fast movement vision is suppressed. So it is very possible you might not be able to

see, adequately see the details that you're viewing while looking at the objects as you're driving along the road.

MR. RAMSELL: Judge, I apologize. Could I ask to be heard on a large topic outside the witness' hearing? Please?

THE COURT: All right. Why don't you step down for a second, please, and just step outside. We'll be back with you shortly.

THE WITNESS: Okay.

THE COURT: Probably be best to go out that way.

(Whereupon the witness left the courtroom.)

THE COURT: All right. Counsel.

MR. RAMSELL: Judge, it's not that I'm bothered by the narrative approach. It seems to get to things quicker. However, on this particular topic here, I sense that the witness is trying to tell us that it's his opinion that nystagmus correlates to impaired driving. I suspect that's what he is trying to draw at here. Now, I'm thinking that's why he has this picture and he's touching one to the other. Now, you've read the *McKown* decision. It says quite bluntly there the HGN test was never designed to measure impaired driving.

Now, my objection, your Honor, is if this witness is going to opine that he has an opinion that the

presence of nystagmus can, correlates to impaired driving as opposed to BAC levels, I'm going to object unless, first, a foundation is laid that this opinion has been accepted in the medical or scientific community or that he has, in fact, done a legitimate study to prove this point. Otherwise, he is just getting up here, giving us his unproven, untested and unscientific, if you will, theory that there is a relationship between the eyes jerking in nystagmus and driving a car.

There's, so on that theory, Judge, absent some foundation outside of his testimony here today of any study somewhere that proves this, I'm objecting to that topic. I'd ask that he not be allowed to talk about that theory because it doesn't appear in any of the peer review literature at all.

THE COURT: What theory is that?

MR. RAMSELL: That nystagmus has been proven to correlate to impaired driving as opposed to the fact that it was invented by NHTSA and designed and acknowledged by the Supreme Court that nystagmus relates to the amount of alcohol and --

THE COURT: You're saying the difference, isn't the direction of the Supreme Court to determine whether or not the HGN test has been generally accepted as a reliable indicator of alcohol impairment? Isn't that what we're here for?

MR. RAMSELL: I thought that it was very clear in

their decision that they were concerned about the fact that it appears to have been designed for one thing, BAC levels, but has been consistently admitted in to court for an entirely other thing which is actual impairment of driving.

THE COURT: Right. That's what they're directing, they're directing the trial court to conduct a hearing on.

MR. RAMSELL: Okay. And at a *Frye* hearing, the witness should come up and not say, my wife took pictures of me and this is how I'm going to prove it. He's supposed to be testifying that here's the industry's or the community's opinion on the subject of which I belong.

THE COURT: He's already expressed that opinion by way of the resolution and his other testimony with reference to the case, and this is somewhat additional testimony that's being offered, I suppose, anecdotally in support of it. Counsel, where are we going?

MR. UPHOFF: Your Honor, the doctor is going to be using the demonstration. He's already talked about how during the saccades there is suppression, suppression of vision. That is what he was describing. So what he is going to be describing, and there will be, he will have support for this, is that during the saccades, because the vision is suppressed when the eye is going from one spot to the next spot, that there isn't, that the brain is not seeing what is going on,

because, as he stated, it takes away the blur, it takes away the streaming. In addition, he is going to talk about --

THE COURT: Which my comment to that is what does that have to do with anything?

MR. UPHOFF: What he is going to establish is that saccades are part of the movement in nystagmus. Nystagmus is a jerking, and that jerking is a saccade, a quick movement of the recovering back to where it was trying to fixate. So during that saccade where the eye is trying to move back to where it's fixating there is a visual suppression.

In addition, he is going to demonstrate how smooth pursuit eye movements are used in every day driving and smooth pursuit eye movements are affected by alcohol, are effected by nystagmus. So, therefore, nystagmus, which is caused by alcohol, affects your ability to use these smooth pursuits and, in turn, affects your ability to operate a vehicle in which you need to use the smooth pursuits.

THE COURT: All right. Let's continue. Get the witness back. Overruled.

(Whereupon the witness re-took the stand.)

THE COURT: Once your witness is situated and you're ready, you can continue on.

Q Dr. Citek, I can't remember exactly what it was you

were saying when you were leaving off, but I believe you had, were discussing how smooth pursuit eye movements are used in driving. If you could pick it up from there.

A Correct. So if smooth pursuits are not present, if you need to use saccades to view the scene from one location to another, then that will potentially disrupt your vision. Now, admittedly there are going to be some otherwise normal people who do not have smooth pursuit eye movements. They can compensate for that by making head movements.

MR. RAMSELL: Objection. Foundation for his opinion.

THE COURT: Overruled.

Q Doctor, continuing on from using smooth pursuits, what is the next portion of this slide?

A The next slide, Slide 11, shows the eye movements that would be necessary to look in to one of the, either of the rearview mirrors, the rearview or sideview mirror. The fact that those mirrors are not directly in front of the driver, the fact that they're off to the side and either elevated or lowered slightly may mean that the driver must move the eyes to that location. If nystagmus is present at maximum deviation, at about a 60-degree maximum angle, and you try to look into your rearview mirror, then viewing in the rearview mirror, which makes an angle anywhere from 40 to

60 degrees from straight ahead, if nystagmus were present, you can think of nystagmus, those fast movements of nystagmus, that repetitive movement, as a whole bunch of little saccades.

During those small saccades, as we said before, vision is suppressed. So that's going to prevent the individual from seeing objects clearly, seeing objects distinctly in the rearview mirror. Likewise, at higher levels of intoxication, when looking into the sideview mirror, that's, in this view, only about 35 to 45 degrees away from straight ahead. So if nystagmus is present prior to 45 degrees and the driver tries to look into the side view mirror, with nystagmus being there, again, it may prevent the driver from seeing anything clearly in the mirror.

MR. RAMSELL: Objection to may. Speculation.

THE COURT: Overruled.

Q Then what is this here?

A Slide 12, traffic signs and signals typically are also not directly in front of the driver and right in front of the field of view. They're off to the side. So from my vantage point here in this particular lane of travel the angle that the sign makes with respect to my eyes is somewhere between 40 and 50 degrees. So if I try to view that sign by simply moving my eyes to the side, if I happen to have nystagmus at approximately that location, I'm going to have

difficulty reading that sign. I might be able to see it, but I might not be able to see what is on it.

Q Would it be also fair to say that as the vehicle is moving these angles are becoming greater because those objects are coming towards you?

A Actually, in this instance, yes, that is correct. Now, again, to be fair, there are going to be some individuals who have nystagmus naturally and they have driver's licenses. Well, they can compensate by simply moving the head. If they have difficulty --

MR. RAMSELL: Objection. Foundation for that statement.

THE COURT: Overruled.

A So if they have, if they have difficulty in certain cases with certain types of nystagmus, then the nystagmus may get, and congenital nystagmus, it might get worse when looking one direction. It might reduce slightly when looking in the opposite direction. That is going to be the case in some of our patients. In either situation, it might simply be easier for the patient to just move the head to that location, to look at an object that is a away from straight ahead.

Q This is now 13?

A Last slide in the series Slide 13 simply demonstrates that vision is in and of itself a divided

attention task. Central vision as we defined previously around the fovea versus peripheral vision, everywhere else in the retina, is a divided attention task and what typically happens with intoxicated drivers, what does happen with intoxicated drivers is they find, they find it difficult to make, to perform divided attention tests. So they find it difficult to pay attention to both central vision and peripheral vision simultaneously. Peripheral vision is going to be critical for assisting with gross movements like maintaining body position, walking, being able to stand still.

If peripheral vision is taken away and only central vision is left, then you may notice body swaying and possibly falling over in that situation. So it is related to HGN in that during the, during one of the postures in which the HGN can be performed an officer may note that the suspect is swaying whereas he did not note or may not have noted that sway previously. The reason for that is because of the central versus peripheral vision divided attention difficulty.

Q So, to clarify that, what you're saying is that the sway may occur because they're using the central area to focus and the loss of peripheral would cause the sway?

A Right. Loss of peripheral awareness would cause that sway. The next three slides show examples of an eye, demonstrating lack, demonstrating the three subcomponents of

the HGN test in order. These videos were taken at an alcohol workshop. I did not take these. These were taken and provided to me by a colleague who has a workshop in Texas a couple years back. I believe they are available on either the NHTSA website or some other training website. I like to show them because they do demonstrate, if they play --

MR. MALONEY: What slide was that, your Honor?

THE COURT: Fourteen.

MR. MALONEY: Thank you.

THE WITNESS: These are the videos I didn't want the sound on. It was obvious it was at an alcohol workshop.

THE COURT: Try that.

Q (By Mr. Uphoff) Could you show that again and describe -- since you were trying to figure out how to turn the volume down, describe what it is we're seeing.

A The eye is moving from side to side. This is, of course, a view of the subject's left eye moving from side to side and the view that you see, there are a couple of bounces at the end, at the extreme positions. That is not what the officer is looking for. It's the smooth movement in between, or, I should say the movement in between. When compared to a normal eye, an eye that can make smooth pursuit movements, you'd notice, it would be obvious this eye was making it in a jerky fashion.

Again, if this was your first observation of this, it may not have looked so bad, but someone who has seen eyes and been taught properly such as an officer who would be doing this type of testing would recognize that difference and would characterize that as a lack of smooth pursuit.

MR. MALONEY: Well, Judge, for clarification, since we have a photo here, can we go back and show, maybe the doctor could tell us when the eye is looking straightforward how many seconds elapsed from the time, when the eye goes to the end point?

THE COURT: You want to do that now or wait until cross?

MR. MALONEY: Well, he's offering an opinion now. We can wait until cross on this to see if this is done pursuant to the NHTSA standards on how to do these tests.

MR. UPHOFF: I can clarify that, your Honor.

THE COURT: You may continue to examine.

MR. MALONEY: We will wait until then, Judge. I'll withdraw the question.

Q You stated, Doctor, that these videos were from an alcohol workshop?

A Correct.

Q Who sponsored that workshop?

A I believe it was in Texas.

Q All right. You stated that --

A I'm sure it was in Texas.

Q Would it have been conducted according to the NHTSA protocols for the HGN test?

A Yes.

Q So you've showed us there the slide concerning lack of smooth pursuit. Do you have other slides regarding the other parts of the test?

A Yes.

MR. MALONEY: Do we have any documentation on this test other than just your testimony that he got this from somebody? Any studies?

THE COURT: Is there an objection?

MR. MALONEY: Yes, Judge.

THE COURT: I'll tell you what. The whole idea here as to whether this anecdotal test, it's a demonstration, you know, whether the NHTSA standards were followed on this or not, what he is showing is, you know, the concept of the bouncing or smooth movements. I don't know that it's that material whether NHTSA standards were followed in this particular case. It's just a general recitation of, you know, here is the bouncing movements that one would look for. You know, it really, it's somewhat helpful to the Court, but it doesn't go to the main issue in the case. So let's not spend,

you know, all, two days on it. Let's move on.

Q (By Mr. Uphoff) So, Doctor, we've moved on to distinct and sustained nystagmus from maximum deviation. This is Slide 15, is that correct?

A Correct.

Q Okay.

A When the eye is brought out to its maximum extent, there is obvious bouncing movement of the eye towards the center bouncing back to the extreme, and now when the eye is looking in the opposite direction, when the right eye is being tested, it also bounces there as it looks in toward the nose. Just for reference, the nose is on the left-hand side of the picture. It's not fully visible. It would be on the left-hand side. So that bouncing is, would be, the nystagmus would be the type of nystagmus that the officer is looking for.

Q This bouncing, this jerking back, is the saccades that you've been referring to, is that correct?

A Right.

Q Then on Slide 16, what is that we'll be looking at?

A Slide 16 shows onset of nystagmus prior to 45 degrees. This is a rather subtle movement so I will point it out as it occurs. When the eye moves from straight ahead before it gets to its maximum extent, right at about that

location, right about there, there are a couple of small bounces and that is the extent to which the officer is looking for the nystagmus. Again, to the trained individual who knows what he or she is looking for, that is going to be obvious and very easy to see because a trained individual, when he is conducting this test, is within arm's length of the suspect, watching the eyes and watching for that type of movement. So it is going to be a very obvious movement. Whereas if the eye did not have that type of movement, it would just be stationary. It would just be still.

Q Okay. Referring to the object or stimulus, does it matter how far from the face the stimulus is held?

A The test is standardized so that the officer holds the stimulus between 12 and 15 inches from the subject's eyes, and that is, in all honesty, done more for officer safety than anything else. I have --

Q So, but, the relation, it could be farther, it could be closer, correct?

A But, again, the recommended distance, the required distance according to the standardized protocol is 12 to 15 inches.

Q Then what is on Slide 16, or, excuse me, 17?

A Slide 17 is a comparison video, split screen comparison video that is provided by NHTSA for training and it

shows the same individual at two different alcohol levels. Zero at the top. Sober at the top. And .112 at the bottom. I'd like to show this slide twice so it goes through the entire test in total. Like to show it twice. So if you're, first looking just at the sober condition, notice the smoothness of the movement during the lack of smooth pursuit component of the test, and then no bouncing at any point. So no nystagmus at maximum deviation or looking to the left. Nor when looking to the right. And then, finally, looking for onset prior to 45, there is none there either.

Q When you say there is none there, you're referring to the top portion of the screen?

A Yes. Now to be fair, you might have noticed a couple of bounces here and there as the subject went to the maximum position or was holding the eyes at the maximum position, but those would, those always went away very quickly. That is normal. That is absolutely normal. That's typical. The nystagmus that the officer is looking for, we show the video once more, now concentrating on the lower half of the split screen, the tracking movement right there, the smooth pursuit movement is not evident compared to what it was in the sober condition. Then looking for nystagmus at maximum deviation, it presents there and is maintained as long as the officer holds the stimulus in that position for the left eye

and then also for the right eye.

The third component, looking for onset prior to 45, there is that obvious slight return to center and bounce back to the side that the eyes have prior to getting to the end point. That is the gaze of nystagmus that is consistent with onset of nystagmus prior to 45 degrees.

Q Now that walks us through the parts of the HGN test, correct?

A Yes.

Q All right. But there are other types of nystagmus which you've been questioned about earlier, is that right?

A Yes.

Q Do you also have some slides on this presentation demonstrating those other types of conditions that are often related to nystagmus?

A Yes, I do.

Q Could you take us through those briefly?

A Very briefly. Very often medical conditions may present, may be obvious. They may be obvious to the officer doing the testing. In order, I'll just name the pictures that are shown here. In clockwise order from the upper left, trauma to the eye, where there is obvious blood in part of the eye where it should not be. Pinguecula, which is a raised yellowish area on the white of the eye, on the sclera, which,

again, when the officer is about arm's length away may be very obvious when he or she sees it. Pterygium which is a growth of the conjunctiva from the sclera on to the cornea. Abnormal growth, which, again, would be very obvious to the officer seeing it. In the lower right-hand corner some older adults will have a ring of cholesterol within the cornea that presents as a whitish or whitish blue ring. Again, should be very obvious when the officer is looking from about arm's length away. Conjunctivitis commonly referred to as pink eye or red eye which is an infection of the conjunctiva. Again, may present as an obvious eye condition.

Last one at the bottom, lower left-hand corner is laser eye surgery. That is an actual photo of an eye under going Lasik surgery. All of these conditions, certainly, except for the eye undergoing the surgery directly, but all of those, the other five conditions would be immediately obvious to anyone looking at the individual. Someone who is, at least, even partially trained in looking at eyes.

What the NHTSA standard says is if the suspect has an obvious eye condition, then the test is not to be done. So these are some obvious eye conditions, but none of these would cause nystagmus. None of these would cause any of the abnormal movements that an officer might expect to see with intoxication. Laser eye surgery specifically has been used as

an excuse in many situations where someone had the surgery and in two or three days later presents with nystagmus. The laser that is used only has energy to penetrate the cornea. It does not penetrate in to the eye beyond the cornea. It, likewise, does not affect the muscles and certainly does not affect the neurology that is controlling the muscles. So none of these conditions will present with nystagmus absent of something else being present.

In Slide 19, I show some other medical conditions, and there is conditions either due to disease or other eye conditions that sometimes have been used as an excuse for the presence of nystagmus. In the research that I have done, in the literature reviews that I have done, diabetes, if it causes eye movement problems, will only cause lack of smooth pursuit. There is no evidence that diabetes causes nystagmus. And then it would only happen during a hypoglycemic attack when the individual actually has low blood sugar.

So in all other instances, for all other circumstances, the individual might appear drunk, might act drunk, might be described as behaving like a drunk, but when tested properly, the eye movement will not show that.

Multiple sclerosis can present as any host of, as any host of problems, as a neurological problem. It can

present as any, it can present with any individual component of the HGN test, but rarely does it present with the entire series of the abnormal eye movements that are tested or the eye movements, I should say, that are tested with the HGN test. So that, likewise, would not be confused. That, by itself, would not be confused for a positive finding on HGN.

In my literature reviews I found only one paper that refers to an unusual case. I think I'm quoting it correctly. An unusual presentation of nystagmus with glaucoma. Glaucoma, which is typically marked by increased pressure within the eye and related phenomenon, usually does not present with nystagmus.

Hypertension, high blood pressure, likewise, by itself, in and of itself would not present with nystagmus. And those are some of our common disease entities that are used as explanations or excuses for the presence of any of the abnormal eye movements that are seen during the HGN test.

Body sway, which may occur when an individual is being tested, as I mentioned previously, the body sway itself, because it might affect, in theory could affect the vestibular system and thereby cause nystagmus, in and of itself it will not cause nystagmus. A sway is a slow movement either back and forth, side to side or in a circular pattern, and that would be too slow to cause any problems or cause any

nystagmus due to the vestibular involvement.

As I've already mentioned before, with regard to eye glasses, poor vision in and of itself is, typically does not present with nystagmus so that is not a valid excuse. And if a driver has a blind eye or an artificial eye, depending on how the prosthetic is placed for the non-seeing eye, if it is attached to the eye muscles and the eye muscles are still intact, it will have seemingly natural movements. In that particular situation, the seeing eye is going to lead the blind eye or the artificial eye, and the eye movements may appear completely natural, so if that driver happens to be intoxicated, then, yes, an officer might even observe the HGN clues on that non-seeing eye. So that is possible. It certainly is possible.

Q Now we are moving on to, these are two types of congenital nystagmus on this eye, is that right?

A Right. Moving on to Slide 20, two conditions with which, only present with nystagmus are albinism which is lack of pigmentation of the skin and hair. And the nystagmus comes about either because the vision is in and of itself fairly poor, poorer than normal. Nonetheless some individuals with albinism, even though they have nystagmus and even though they have slightly or partially decreased vision, they may have vision that is adequate for driving. So some of these folks

can get driver's licenses and drive safely.

Another condition with which nystagmus commonly presents is a condition known as aniridia. That is a lack of the iris. Complete lacking the color part of the eye.

The photo here shows a light, you see the rectangular beam coming in from the right-hand side of the image that illuminates the inside of the eye and it looks like the red reflex that you get on a flash photo because the retina is reflecting all the light back out to the eye. Under normal circumstances, this individual would look to have a huge pupil. There might be the root of an iris left, maybe one millimeter or so, but the condition in and of itself is known as aniridia and again nystagmus will present with that.

Q Now, when you're talking about these two types of congenital nystagmus, do they present in a similar fashion as an alcohol induced nystagmus?

A No.

Q How do they differ?

A Specifically with albinism, I have a short video clip with someone who has albinism. I'd like to show that in a little while. Nystagmus would be present when the individual is looking straight ahead. That is one time that the officer definitely does not expect to see nystagmus.

Q Is when an individual is looking straight ahead?

A Right. Likewise with aniridia it will be present all the time.

Q Now, with congenital nystagmus, you stated that if they're otherwise physically able they would be licensed to drive a vehicle, is that correct?

A Correct.

Q So the nystagmus that is the congenital type wouldn't alone prevent someone from safely operating a vehicle?

A Correct.

Q Why is that different than nystagmus that would be alcohol induced?

A Because the alcohol induced nystagmus, because if you think of that acquired nystagmus as a whole bunch of little saccades that the brain now has to control and has to be aware of, with vision being disrupted during those small eye movements, vision being suppressed during those small eye movements, visual function is going to be disrupted.

What happens in the congenital nystagmus is the eye slows down for even as short as one-tenth of a second. So that would be less time than you or I would be able to notice. We think the eyes are moving all the time, but, in fact, they do stop if measured very very precisely and carefully. They would stop for about a tenth of a second or more. That is

enough time for the brain to take in normal visual information and process that information relatively normally.

So that individual's brain has already learned how to deal with these constantly moving eyes and only taking information during those brief instances when the eyes actually do come to a short stop.

Q So the difference is that somebody who has the congenital nystagmus, they've adapted to deal with that, is that correct?

A Correct.

Q Whereas alcohol induced nystagmus is acquired so it's something that a person isn't normally living with?

A Correct.

Q And that is, would be the difference of why congenital nystagmus wouldn't prevent someone from necessarily being able to drive?

A Correct. By other causes and examples in the bottom of Slide 20, I simply mean other neurological causes. Again, we can go through the whole list of the 40 plus different types. I don't think we want to do that today.

Q The ones you refer to are some of the most common?

A Right. On Slide 21, this is a video that I shot at an alcohol workshop on one of the volunteers who when he was sober was able to demonstrate voluntary nystagmus. Again, we

generally characterize nystagmus as an involuntary repetitive eye movement, involuntary motion. But there is a phenomenon that some individuals, a small portion of the population can induce nystagmus voluntarily.

MR. RAMSELL: I'm going to object on foundation.

THE COURT: It's the same test that we're all talking about? Same workshop?

THE WITNESS: This is, I will tell you that I shot this at a workshop, alcohol workshop in the state of Washington.

THE COURT: How long ago?

MR. RAMSELL: If I might make a more clarified point.

THE COURT: All right.

MR. RAMSELL: We all know about natural nystagmus, but voluntary nystagmus.

THE COURT: Well, your objection was foundation.

MR. RAMSELL: Right. That he said --

THE COURT: Why not relevancy? What is the relevancy?

MR. RAMSELL: I like the fact that there is false nystagmus of some form. But this witness' statement that a portion of the population can make their eyeballs jerk voluntarily, where is he getting that from? Objection

foundation. Is this a personal anecdotal statement? Is it a study?

THE COURT: I assume he is testifying as an expert in his field so that's where he's getting his information. So, based on that reason, overruled. You may continue to examine.

Q So this is a video of voluntary nystagmus and you were explaining how that was accomplished, is that right?

A Right. Most individuals who I know who can do this, again, not everyone can do this, but most will concentrate, try to concentrate and move their eyes back and forth quickly and, again, they, very often they will only be able to do so when looking straight ahead. So it is a type of nystagmus. The purpose is to present it as a type of nystagmus that is possible, but that has nothing to do with HGN. So it should not and would never be confused with HGN.

Q So you've seen individuals displaying, and as this video shows, displaying voluntary nystagmus?

A Yes.

Q What is the longest period of time that you've been able to witness or you know of somebody maintaining this nystagmus when they're doing it voluntarily?

A Several seconds. Maybe ten, fifteen seconds.

Q What is the likelihood that somebody would be able

to hold and create this type of voluntary nystagmus throughout the entire HGN test?

A I would say very unlikely because to make it appear exactly like the eye movements that an officer expects to see on someone who is intoxicated would be extremely difficult to do if not impossible.

Q The voluntary nystagmus wouldn't have anything to do with the smooth pursuit portion of the test, is that correct?

A Correct.

Q Moving on to the next slide?

A Slide 22 then shows a demonstration of vertical nystagmus. There are other, alcohol will have other effects, will cause other types of eye movements that are outside of the HGN test, and during the vertical nystagmus test, the eyes are brought to the maximum vertical position and it's similar in fashion, similar to the nystagmus at maximum deviation that we see on the horizontal test. The eyes are held at maximum upward position for four seconds and that up and down --

Q So basically, excuse me, you're basically demonstrating there are other types of alcohol induced nystagmus, but here it is vertical so it is in a completely different form, is that correct?

A Correct.

Q Then what is the next slide?

A Slide 23 is a cartoon drawing of the vestibular system which incorporates the semicircular canals and the otolith organs. The vestibular system is involved with our sense of balance and our understanding of where we are in a gravitational environment. The vestibular system will contribute to eye movements in assisting smooth pursuits.

When I testified earlier that smooth pursuits occur whenever there is relative motion between the observer and the object, if the object is stationary or the observer is moving, especially when turning, then that turning signal, that movement of the head is captured by the vestibular system and it will contribute to the smooth pursuit and make it more accurate.

So what will happen, though, with intoxication, with alcohol intoxication especially, is the vestibular system becomes disrupted so a phenomenon known as positional alcohol nystagmus may occur. This will occur only if the head is placed in an non-upright position.

Actually the two positions in which it does not occur is when the head is upright, such as when standing or seated normally or when laying down flat on the back with head in line with the body. The head must be tipped to the side as I got in this video. And, yes, this subject, once again, video that I had taken. The subject was intoxicated. Had a

little bit of difficulty keeping his eyes open, but right towards the end of the video, right about there, careful observation, you see a small movement to the eyes. The critique very often is that the officer observed positional alcohol nystagmus rather than any of the components of the HGN that he was supposed to observe. The rebuttal to that is the only way to get positional nystagmus is to move the head out of an upright posture and that is not how the test is conducted. Even if the suspect is laying flat on his back, the head is in line with the body, you would not induce positional alcohol nystagmus.

Q And, if we could, just, maybe we don't need to show the videos to all these. If you could briefly roll through these last few slides and the type of nystagmus that is referred to.

A Certainly. I'll skip over Slide No. 25 because it is just the demonstration slide. This is a colleague of mine on the east coast in Connecticut. He is going to induce caloric nystagmus in himself where he injects warm water in to one ear, cold water in to the other ear, and the critique that is raised here often is that a driver is driving down the road on a cold night. There is warm air blowing out of his dashboard from a heater on one side. He's got the driver's side window open blowing cold air on the other side and thus

it induced a caloric nystagmus that would have this type of appearance. Again here --

Q What is the difference in temperatures that has to be created for caloric nystagmus?

MR. RAMSELL: I object. What does this have to do with the issues, Judge?

THE COURT: Counsel.

MR. UPHOFF: These are specific types of other nystagmus which he is differentiating that they wouldn't be confused with horizontal gaze nystagmus because these are commonly other types of reasons why people claim they have nystagmus during the test. He is simply differentiating and saying that these would not be confused with the horizontal gaze nystagmus.

THE COURT: All right. I'll allow it.

MR. RAMSELL: Judge, for the sake of brevity, if you will, I believe the witness would be able to say that in one statement there are no other types of nystagmus that can be confused with horizontal gaze nystagmus. Then we're done with 30 minutes of the State raising their own arguments of what defense attorneys do in other cases and then knocking them back down again.

MR. UPHOFF: Your Honor, is Mr. Ramsell's objection that I should be doing my direct the way he wants it done.

MR. RAMSELL: Brevity, I believe, is your Honor's ability to control. If it can be said in one sentence, it doesn't need to be repeated in 30 minutes.

THE COURT: It's somewhat collateral.

MR. UPHOFF: I'll try to keep it moving through, your Honor. We were just trying to raise the other types of nystagmus that are commonly broached with this topic and trying to differentiate them from the horizontal gaze nystagmus. I'll move through it more quickly.

Q Doctor, at this time, there is a slide here. Rather than showing us the video, could you briefly describe what post rotational nystagmus is and why it wouldn't be confused with HGN?

A Post rotational nystagmus occurs after the head and body have been rotating for a brief period when they come to a stop. Yet it comes from stimulation of the vestibular system. Immediately after the head stops rotating and comes to a stop, there is going to be an after nystagmus, a nystagmus going in the opposite direction to the rotation. That will be seen when the subject is looking straight ahead.

The argument that is raised here, if I may, is that if the driver was in a spin-out accident or roll-over accident, he may argue, well, that rolling or that spinning caused post rotational nystagmus. Again, an officer doing the

testing would easily recognize the difference. That is not the type of nystagmus he is looking for if it were present.

Q How long does it last for?

A Typically post rotational nystagmus lasts for no longer than 15 to 20 seconds after the head stops moving.

Q The next slide. This is --

A Slide 28 says, discusses environmental conditions. Fatigue nystagmus is a condition where the eyes held at maximum deviation for a minimum of 30 seconds and some text, some authorities even claim it must be a minimum of 90 seconds. Here the eye muscles actually do fatigue even in a sober, well rested subject.

It is not an issue for HGN testing simply because the officer does not hold the suspect's eyes out at the maximum position for that long. It is not a cumulative effect of repeated testing. It must be continuous maximum lateral gaze to the side.

Q So fatigue nystagmus has nothing to do with whether or not a person is tired?

A Correct.

Q Then this slide?

A The last one that I'll show here demonstrates optokinetic nystagmus. When presented with movement of a visual stimulus, such as a train that is moving past a

crossing, if you're sitting there, your eyes will naturally, if you're paying any attention to the train at all, you will follow the train and jerk back, follow the train and jerk back. That's known as optokinetic nystagmus. That is a natural response. Anyone can present with that if they pay attention to the moving stimulus.

The argument that is made here is that if anything was moving behind the officer when he was conducting the test at roadside, if there was traffic, if there was wind blowing leaves or anything like that, that that affected, that caused optokinetic nystagmus which the officer mistook for HGN or any of the components of HGN. And in my studies, and actually in the video clips if we have time to view them or I'll leave them for the Court to view, actually demonstrate optokinetic on individuals and have them look at something else while that stimulus, while the rotating drum is still moving and the optokinetic nystagmus goes away which is exactly what we expect to find under typical testing circumstances.

Q Is that the --

A That would be the end of the slides because Slide 30 would show the vertical.

Q Okay. Based on that information, and you told us about the smooth pursuit and how that affects driving and the

saccades and how they affect vision. Based on that and what you have just showed us, does the, what does the HGN test show in terms of a person's ability to operate a vehicle?

A If the eye movements, if the eye movements are abnormal and consistent with what an officer knows to occur in someone who is intoxicated, then that would demonstrate an impairment of that driver's visual function.

Q And then you've stated that you trained law enforcement officers, is that right?

A Yes.

Q So do you have an opinion as to whether or not an individual can be properly trained to administer and interpret the HGN test?

A Yes.

Q What is that opinion?

A I think it can be done.

Q You've also done some of your own research in terms of horizontal gaze nystagmus, is that correct?

A Yes.

Q One of those studies, which was already entered in to evidence, I believe it was People's Exhibit No. 6, was that the study that was referred to as nystagmus testing in intoxicated individuals?

A Yes.

Q What year was that study published?

A 2003.

Q Did it include research on the HGN?

A Yes, it did.

Q Could you describe for us that study and its conclusions?

A We assessed a total of, I believe, 96 volunteer drinkers over the course of several alcohol workshops in the states of Oregon, Washington and Idaho. We had volunteer officers used as a evaluators. They were masked to how much the subjects had been drinking and even if they had been drinking. We did have placebo drinkers as well. We had the officers test the eye movements of the subjects when they were in the standing, when they were standing, when they were seated and when they were laying down.

The conclusion is that the test is robust. The findings, the results from the standing posture were consistent with other research that had been done previously, and the findings that we found on the seated posture and the laying down posture were consistent with the standing posture as far as practical administration and practical scoring go. There were statistically significant differences, but that's when we just look at the multiple of all the subjects who were run and look at differences of a tenth of a clue or few tenths

of a clue, which, of course, is not practically possible to do.

Q Now, Dr. Citek, the Court has already heard some testimony from Dr. Citron and will likely hear testimony from Dr. Steven Rubenzer who is a forensic psychologist. Are you familiar with those individuals?

A I've heard of them. I have not met them.

Q Are you familiar with some of their work?

A Yes.

Q First, I'd like to talk about Dr. Rubenzer. Are you familiar with his two-part article published in a defense publication called The Champion?

A Yes. I've read that.

Q If you briefly could describe for us what conclusions does Dr. Rubenzer make in that article?

A They are multiple. He attacks the foundation of field sobriety tests in general and HGN specifically. He has issues with how the original studies and the validation studies were done. He claims that there was no independent corroboration of the phenomenon that were being studied, especially with regard to HGN, that is, only from those NHTSA sponsored studies.

Q Some of those studies that you refer to that he was disputing, would those be the original, some of the original

studies done by Marcelline Burns such as, excuse me, 1977 psychophysical test for DWI arrests? Would that be one of those?

A Yes.

Q Tharp and Burns, *Development and Field Test of Psychophysical Tests for DWI Arrests*, 1981?

A Yes.

Q Anderson, Schweitz and Snyder, 1983, *Field Evaluation of a Behavioral Test Battery for DWI*, would those be the studies that he was referring to?

A Yes.

Q And do you agree with the conclusions that he reaches in his article, that Dr. Rubenzer reaches in that article?

A No, I do not.

Q Why is it that you don't agree with those conclusions?

A Well, in one situation, he attacks some of the statistical findings, and in reading through that article, I find that I have an issue with what he presents as a statistical analysis which I think is completely incorrect. He attacks how the studies were conducted complaining that the field studies had no control groups for example. In fact, the first major field study, I believe, I believe it was a 1983

study, did have a control group within it.

Q What was that control group?

A That control group were officers who were not trained how to do the field sobriety, were not trained how to do HGN or, I believe, the other field sobriety tests.

Q So you don't agree with the methodologies that were used in Dr. Rubenzer's study?

A Right. I don't agree, I think he makes the wholesale statement that all of the NHTSA sponsored studies were faulty and I do not agree with that.

Q And you stated that he was indicating that maybe some of those studies hadn't been followed up, but isn't it true that there is studies that have followed up on that research and some of those were even independent of NHTSA?

A Correct.

Q And I'll briefly go through these. Would that include the 1995, *A Colorado Validation Study of the Standardized Field Sobriety Test*?

A That was NHTSA sponsored.

Q That was NHTSA sponsored. These will be both NHTSA and non-NHTSA sponsored, is that correct?

A Some might be. I believe the studies that were done by McKnight and his group, at least one of them on the low BACs was initially sponsored by NHTSA, but then was published

in the peer review journal.

Q Would that be the 2002 *Sobriety tests for low blood alcohol concentration*?

A Yes.

Q That was published by NHTSA?

A Yes.

Q But it was published in a peer reviewed journal after that?

A Correct.

Q Would some of these other studies include the 1998 *Validation of the Standardized Field Sobriety Test Battery at BACs below .10%*?

A That was also a NHTSA sponsored study.

Q 1998, *Florida Validation Study of the Standardized Field Sobriety Test (SFST) Battery*?

A Right. Another NHTSA sponsored study.

Q One that is referred to as the Good, Augsburger, *Use of Horizontal Gaze Nystagmus as a Part of Roadside Sobriety Testing*?

A That was an independent study. That was not sponsored by NHTSA.

Q That was an independent study?

A Yes.

Q Does Dr. Rubenzer give an opinion about his thoughts

on the independent Good, Augsburger study?

A I think his conclusion of that is that, based on his reading of it, HGN did not add anything to the arrest decision. I think that's a very narrow reading of the purpose of that study.

Q So you don't agree with Dr. Rubenzer's conclusion on that study?

A No.

Q What do you think the Good, Augsburger study does actually do?

A What it demonstrated is in individuals who were stopped by police officers and who were under arrest anyway, demonstrated how well that the HGN test would have discriminated. I believe in my calculations, he says 92 percent accuracy. I believe when I did the calculation of it and cited that study in my paper, we came up with a 90 percent accuracy so it is right in line with what the NHTSA sponsored field studies were demonstrating for an accuracy rate for the HGN test.

Q Would you say there is multiple studies that reach the same or similar conclusion?

A Yes.

Q And you also mention briefly that one his critiques was about is the control group necessary? Is a control group,

as he envisions it, necessary or feasible in these types of studies?

A It depends on the question that is being asked. In certain instances, if the question is asked in a certain way, it would be virtually impossible to have a control group, or, at least, not be feasible to have a control group. The way the early validation studies that were done in the field with actual drivers being arrested, yes, there was a control group there of officers who were not trained how to use the HGN or the other SFSTs and their arrest decisions were studied alongside officers who were trained how to use the test.

In the later validation studies, I'm not sure it's much longer a question of whether this is a good test or not. The question more likely is, how good is the test at finding impaired drivers on the road? In that case, it would be difficult to set up a control group.

Q Is there a journal article that you rely on in your teaching regarding whether or not control groups are always necessary in studies?

A Yes. There is a paper published in, I believe it was 2003, on the fact that the use of parachutes had not been subject to a rigorous scientific study when a person jumps out of an airplane.

Q Can you essentially tell us why that study says you

can't have a control group for those type of situations?

MR. RAMSELL: Judge, I believe the conclusion would be obvious. If they had a controlled group of people not wearing parachutes jumping out of planes, those people would die. They don't need a control group to prove that a parachute helps people land safely. I think I'm following correctly.

THE COURT: All right. You may continue to examine.

Q Would that be an article written by Smith, Gordon & Pell?

A Yes.

Q And all the articles that we referred to so far, those have been peer reviewed and published, is that right?

A Except the NHTSA studies. Except for the purely NHTSA studies.

Q But the others like the Good, Augsburger and McKnight were published and peer reviewed?

A Yes.

Q Now, there's been claims that the speed at which, the smooth pursuit portion of the HGN test is too fast. Do you have an opinion on the speed at which the smooth pursuit test is conducted?

A I'm not sure which speed he is referring to. If it's, it's not that obvious because I'm not sure if he is

referring to the two-second movement from the midline to the side or a two-second movement from one side to the other. If it is a two-second movement from the midline to one side, then that would be the proper speed of 30 degrees per second. If it is a two-second movement from one side to the other, then it's a faster movement of 60 degrees per second, and I would agree that is too fast.

In either case, if he is only referring to the two seconds as going from the midline to the side, I disagree. It is not too fast. That is proper speed at which a normal sober individual should be able to follow. If he is referring to the movement from one side to the other taking only two seconds, that is too fast, and that's not how the test is to be conducted.

Q And there are some, there have been some studies in to the speed of smooth pursuit and at what speed it would invite these saccadic movements, is that right?

A Right.

Q Would those be the studies by Robinson and Schalen?

A Yes.

Q And have those also been peer reviewed and published?

A Yes.

Q Now, there's also some testimony, or, excuse me.

Not testimony. There's also a portion of that article that talks about a reliability co-efficient. Can you explain for us what that is?

A That just gives a measure of how close to two sets of results are. If we had one set of results from one observer and a second set of results from the second observer, how close they match. How close they come in the actual observations. Whatever scoring criteria is used.

Q Dr. Rubenzer claims that there needs to be a reliability co-efficient of .9 with .95 being considered the desirable standard. Do you agree with that?

A No.

Q Why don't you agree with that?

A For testing human function, especially if were not using any specialized equipment or specialized techniques, if it's only human observation and human behavior that is being, human observation to perform the test, human behavior that is being tested, a reliability co-efficient of closer to .8 or even .7 is perfectly adequate in many cases.

Q The Court has already heard testimony from Dr. Citron. Have you had an opportunity to review that testimony?

A Yes.

Q In his testimony, Dr. Citron referenced an article entitled, *Imposition Nystagmus as an indicator of ethanol*

intoxication. That was written by J.L. Booker. Are you familiar with that article?

A Yes, I am.

Q Briefly, what conclusion or conclusions does that article reach?

A His conclusion is that sleep deprivation either with or without alcohol causes increased end point nystagmus to the point where it might be mistaken for nystagmus at maximum deviation by a police officer.

Q Do you agree with that conclusion?

A I do not.

Q Why not?

A Overall the conclusion, his conclusion is that effectively the HGN test should be scraped because of this one apparent finding. He did not conduct the entire test, the entire HGN test and standardized protocol. He may have done that one piece as it's required to be performed, but not the entire test, including lack of smooth pursuit and onset prior to 45. He claims that for his subjects he collected breath samples and blood samples and even urine samples, but makes absolutely no distinction between them when looking at alcohol levels as to which type of chemical testing he did on which subjects and that he even correlated those findings correctly. So I'm not sure that, I'll say those conclusions, his

conclusions are not reliable.

Q All right. In Dr. Citron's testimony he also stated that if a person has a cold or stuffed ear they can develop nystagmus as a result of vestibular dysfunction. Do you agree with that statement?

A Yes.

Q But is it likely that it would cause a nystagmus that an officer would confuse with alcohol induced nystagmus?

A No.

MR. RAMSELL: Objection. Asks for this witness to speculate if an officer could confuse one with the other. That's inappropriate.

THE COURT: Rephrase the question.

Q If a person is, if a person is presenting with nystagmus as result of a cold or stuffed ear, would that be confused with the type of nystagmus that presents when induced by alcohol?

A No.

Q Why not?

A Because either it would be present only if the head, if it's due to a vestibular problem, inner ear issue, it would be present if the head is tipped to the side away from the upright position or even if it is present when the head is upright, it would be present when the person is looking

straight ahead.

Q Dr. Citron also testified that rotational nystagmus is the most commonly seen nystagmus in clinics from childhood on up. Do you agree with that statement?

A No.

Q You stated that you've had clinical experience for how long?

A Over 13 years.

MR. UPHOFF: If I could have just a moment, your Honor?

THE COURT: All right.

Q Dr. Citek, ultimately Dr. Citron in his testimony stated that no matter what type of nystagmus is present it's not going to impair the driver. Do you agree with that statement?

A No.

Q Why don't you agree with that statement?

A Because we know with acquired nystagmus, for whatever reason, if it is intoxication, an inner ear infection, anything else that would induce a required nystagmus, the brain is not used to the eyes moving in the fashion that they're moving with that constant movement. So as visual function is being suppressed,because the brain is thinking it's making continuous series of small saccades, it's

going to disrupt visual function. You're not going to be able to see as clearly. You're not going to be able to see as well.

Q Are you aware of the study that supports that position?

A Yes.

Q I'm not sure how to pronounce his name, but was that study written by the individual, last name spelled, B-U-I-K-H-U-I-S-E-N?

A Yes.

Q That was entitled *Traffic Perception Under The Influence Of Alcohol*, is that correct?

A Yes.

Q Was that peer reviewed and published?

A Yes.

Q So, Dr. Citek, do you have an opinion as to whether or not the horizontal gaze nystagmus test is a reliable indicator of impairment?

A Yes.

Q What is that opinion?

A That it is.

Q Can you explain for us just briefly, again, how it's an impairment.

A It's an impairment because you're, during the

process, you're demonstrating eye movements that you don't normally make. In other words, you're trying to make smooth pursuit eye movements, but you can't, and, therefore, you must make saccades, your visual function will be disrupted. Your visual function will be reduced.

If you move your eyes to the side and you have nystagmus when you don't expect to have nystagmus, again, your visual function will be disrupted.

Q So if there are other indicators of alcohol consumption, then, would you have an opinion as to whether or not HGN as a test is a reliable indicator of alcohol impairment?

A Yes.

Q What is that opinion?

A That it would be.

Q So essentially your testimony is that alcohol induced nystagmus is or can be impairment in and of itself because it's a temporary or required phenomenon, is that correct?

A Correct.

Q Is that a commonly accepted view in the optometric profession?

A Yes.

Q Do you know if that view is included in any texts

that are used for instruction within medical schools or in the ophthalmological field?

A Yes, it is.

MR. UPHOFF: Your Honor, if I may approach again?

THE COURT: All right.

Q Doctor, I'm now going to show you what has been marked as People's No. Exhibit 22 and 23 for identification. Do you recognize those exhibits?

A Yes, I do.

Q What are those?

A Those are pages from two textbooks that I provided to the State. One of the textbooks is one that I had used when I was a student and learned from. The other is the most recent addition of a common text that is used that describes eye movements. Describes neurology of eye movements.

Q Specifically for Exhibit No. 22 is that *The Neurology of Eye Movements*, Fourth Edition 2006?

A Correct.

Q Is that written by John Leigh and David Zee?

A Yes.

Q And the second one, is that *Binocular Vision & Ocular Mobility*?

A Yes.

Q That's the Fourth Edition in 1990?

A Correct.

Q And that was written by, was that Guntar VonNoorden?

A Guntar VonNoorden.

Q And in regards to People's Exhibit No. 22, can you just briefly tell us why this text supports your opinion that nystagmus is in and of itself an impairment?

A I think it makes that statement right within the first paragraph describing nystagmus and describing those problems.

Q As to 23?

A As to 23, again, it is within, on Page 435 in the right-hand column in that first paragraph under the heading Sensory and Motor Type. It discusses sensory defect nystagmus and that would be consistent with an acquired nystagmus due to intoxication. It is a sensory defect in that sense. It says inadequate image formation causes a disturbance of the feedback from the fovea that interferes with ocular motor control of the fixation mechanism.

Q And that's what you were describing to us earlier when you were showing us the fovea and those other muscles, correct?

A Yes.

MR. UPHOFF: Your Honor, at this time, the People would move to admit People's Exhibit Nos. 22 and 23.

MR. RAMSELL: Still no objection.

THE COURT: All right.

(Whereupon the State's Exhibit Nos. 22 and 23 were admitted into evidence.)

Q You stated these are used in optometry schools and you yourself used one of these texts?

A Yes.

Q Do you know if they're also used in medical schools and for ophthalmology?

A I believe they would be. I don't know for certain, and I don't know which schools do use them, but I believe they would be.

Q So, in addition to your opinion that alcohol induced horizontal gaze nystagmus is in and of itself an impairment, you also have an opinion about whether or not there is a correlation between the HGN test and in particular BAC?

A Yes.

Q What is that opinion?

A Well, there are two components. Two factors that go into that. One is in scoring the test that at higher BAC levels more clues will be observed during the HGN test. So that is going to be, that is a consistent finding. The other is if we were able to carefully measure the angle of onset

during the third component of the HGN test, then that by itself, that measurement of angle of onset has previously been demonstrated to correlate with the BAC as well.

Q So, in your expert opinion, is the HGN test also a valid and reliable tool that law enforcement officers can use to determine a potential BAC?

A Yes.

Q And a valid and reliable tool they could use in determining alcohol impairment?

A Yes.

Q So as an expert in the field of optometry, the area of nystagmus and more specifically the area of horizontal gaze nystagmus, and with your review of the relative materials, your experience and the studies specifically related to alcohol induced horizontal gaze nystagmus, is it your opinion, to a reasonable degree of scientific certainty, that alcohol induced horizontal gaze nystagmus is an impairment to a person's ability to operate a motor vehicle and that the horizontal gaze nystagmus test is generally accepted in the field of optometry as a reliable indicator of alcohol impairment?

A Yes.

MR. UPHOFF: No further questions.

THE COURT: All right. We'll take our second

recess. Ten minutes, please.

(Whereupon, the Court had a brief recess.)

THE COURT: All right. Let's get back on the record. Counsel, you may proceed when ready.

MR. RAMSELL: Judge, just so your Honor is aware, co-counsel and I have discussed a number of the issues. I have to be blunt. I mean, we're starting, it is about five minutes to four. I probably received a couple hundred pages of text materials. I'm going to try to work through this, but with all due respect, I can't say that I'd be able to finish my cross of this witness in this period of time with the materials I received today.

THE COURT: All right. Well, we'll never finish until you start. So we'll see where we end up at.

CROSS-EXAMINATION BY

MR. RAMSELL

Q Mr. Citek, would you agree with me that there, on a number of the statements you've made about HGN, there appears to be other authors of published material that you disagree with?

A Correct.

Q And, to sort of kind of go through some of them, there are other published peer reviewed articles where the

authors have said that the same nystagmus you would see from alcohol can be seen in a variety of these other conditions, right?

A I'll grant you that. Yes.

Q You disagree with them?

A Correct.

Q The bottom line statement I think I've been hearing from you, your largest theme, if you will, is that in your opinion horizontal gaze nystagmus can only be seen from alcohol?

A No.

Q Do other things cause horizontal gaze nystagmus? And I use the term things in the largest sense.

A I'll take it in the largest sense. Yes.

Q Okay. So if one were to see horizontal gaze nystagmus in an individual, and it was, in fact, there, confirmably there, the cause of that nystagmus would still be open to debate by recognized authors in this field. Fair statement?

A I don't think -- without qualification, no, I don't think so.

Q Now, all right. Well, let's talk about something else here. This one piece of literature I just received today here. Chapter 21. Nystagmus. I don't have an exhibit number

on it. Do you recall what book that came from?

A It will probably be on the last page.

THE COURT: State's 23.

Q (By Mr. Ramsell) Okay. Here it is. *Binocular Vision and Ocular Motility.*

A Yes.

Q It says at the very beginning of the chapter, "The etiology and clinical manifestations of nystagmus are not discussed in detail in this chapter, semicolon, the reader is referred to the standard texts on neuro-ophthalmology for this information, period." Have I read it accurately?

A Yes.

Q So this is a book you received during your optometry school?

A Yes.

Q And your school refers to neuro-ophthalmology for a greater and more detailed discussion of the topic of nystagmus?

A Well, that text does. Yes.

Q Well, the text that you were taught was authoritative and reliable in your field, refers, in fact, to the field of neuro-ophthalmology?

A Certainly.

Q And neuro-ophthalmology would be a sub-field of

ophthalmology, correct?

A Certainly. Yes.

Q All right. Now, in one of the articles you wrote for the City of Phoenix called the DRE, Volume 19, Issue 1, do you remember writing for them or having something published by them that you authored?

A I've had a couple things published by them. What was the year on that, please?

Q Volume 19, Issue 1, and it's an article of yours that apparently was originally reprinted from Utah Prosecution Counsel?

A Oh, yes. Okay.

Q And now I want to talk about the practical value of the HGN test if I might as opposed to classroom value. Follow my terms generally?

A Certainly.

Q In other words, instead of talking about the value of HGN in a theoretical sense, I want to talk about it in the field?

A Okay.

Q All right. The value of an HGN test is only as good as the person who interprets it; would you agree with me?

A Correct.

Q You would agree that the accuracy, reliability and

validity of the test you call the HGN test is completely dependent on the training of the person giving it and that person's ability to interpret and observe the symptomatology. Is that a fair statement?

A Yes.

Q Okay. So absent an ability to perform it correctly, observe the science correctly and interpret it correctly, the value of the test is only theoretical. You would agree with me there, right?

A Okay. Yes.

Q All right. So when it boils down to it, you have a test that you, as an optometrist, find valuable in your field and worthy of use as described by yourself?

A Yes.

Q Okay. But when we take it out of the college of optometry and deliver it to law enforcement, you have to transfer the validity, accuracy and reliability to their ability to perform it, observe it and interpret it correctly. Fair statement?

A Yes.

Q All right. Now, are you a certified instructor under National Highway Traffic Safety Administration standards?

A Nope.

Q Well, we had a witness testify. You've commented on some of them. Let me offer this one. Master Sergeant Tony Lebron. L-E-B-R-O-N. He testified last week. He told us that for a period of time that the HGN test was taught by NHTSA to be performed where you observe all three phases or clues, left eye first, right eye second?

A Yes.

Q As opposed to left and right, left and right and left and right?

A I'm aware of that. Yes.

Q Now, I'm looking at one of these manuals that you have here which is from 1977. NHTSA. Might have been introduced in to evidence. I'm not sure of the Exhibit number, though.

MR. UPHOFF: 2006 manual. I'm sorry.

MR. RAMSELL: I'm sorry. March of '81.

MR. UPHOFF: It hasn't been entered yet.

Q You brought this manual to, is this something you've seen before, the March of 1981 study or NHTSA study?

A Yes. I've seen it before.

Q In 1981, that NHTSA study had a certain procedure for how the test was performed, right? It was explained in here and I'm showing it to you right now?

A Yes.

Q Back in 1981, didn't that NHTSA procedure describe checking for a single clue in left and right eye, then move to a next clue, left and right eye, then move to a third clue, left an right eye?

MR. UPHOFF: I'm going to object as to relevance. Again, we covered this last time. We're considering the test as it is now, as it is administered now. Is this just about the administration of the test? If it is, then I don't feel how they were administering it in 1981 is relevant.

THE COURT: Overruled. You can continue to examine.

Q Isn't that how it is described?

A Yes.

Q What manual from NHTSA has ever described the procedure for administering the HGN test where you check one single eye for all three clues and then move to the other eye? What year are we talking about, because I got them all?

A I'm not sure if it was, I do not know specifically, but I do know, anecdotal evidence, officers have told me from 20 odd years ago that that's how they had originally been taught how to do the test.

Q Well, we heard testimony that from the mid '90s is where there was a change from a single eye checking all three clues, and then moving to the second eye to levels of clues for each eye at a time?

A The '90s is 13, 14 years ago.

Q Can you name an actual NHTSA manual that actually says that as opposed to your anecdotal conversations?

A No.

Q All right. Now, are you telling us that the manner in which the HGN test has been taught to police officers, the procedure they're supposed to follow, has changed from time to time over the last 30 years?

A As I understand it, it has. Yes.

Q And each time it's changed, has someone done a revalidation to ensure that the new procedure still is supported by the old statistical validations or do they, do they just keep going?

A Well, I'm not sure in this case that it is that relevant.

Q I'm not asking for you to make a legal determination. I'm asking, each time there was a change of procedure, was there a revalidation study performed by NHTSA or contracted out by NHTSA?

A Again, from a scientific standpoint, I don't think that's relevant.

Q Listen to my question.

A Okay. Not that I'm aware of.

Q So factually you would say, no, I do not know of

any?

A No. I do not know of any.

Q All right. Thank you. You are familiar with how officers are instructed to give the test, right?

A Yes.

Q And now I'm going to ask you, as part of your expertise, tell us how is an HGN test supposed to be administered correctly?

A You want me to go through the whole verbiage.

Q As if you were an expert telling the judge this is how one does this test.

A Okay. So initially, if I may, sir, please, stand with your feet together. Hands at your side.

Q Assume I've done that?

A All right.

Q Otherwise, I would normally refuse, but that's a sidenote.

A And that's your prerogative. First, I would ask you a few questions. You have any problems with your eyes? I see you're not wearing glasses. Do you wear glasses normally? If not, are you wearing contact lenses. Are you blind in one eye? Do you have any problems with your eyes? Do you have any injuries you're aware of to your head or to your eyes that you're aware of? Presumably, if you answer no, I would begin

the test.

First thing I would do is check for pupil sizes just to rule out the possibility of any head injury.

Q And there you would simply be observing the eyes?

A Simple observation from about arm's length away.

Q You would use your own eyeballs, if you will, to guesstimate whether they're equal or not?

A Right.

Q What's next?

A Next is to check for equal tracking just to see that the eyes move together and have full range of motion.

Q Physically what would you do in order to perform that step?

A It would be equivalent to, it's not the same as, but equivalent to, similar to the lack of smooth pursuit test, but there is no speed prescribed. There is no speed required. It can go as far as appropriate, or, slow or as fast as the officer wants to go to check that.

Q That's how you tell a police officer to do it? Just as you've spoken now?

A As I've spoken now, move the stimulus at any speed you'd like that will demonstrate to you that the eyes move together.

Q Wouldn't it be more wise for you to tell the

officer, hold a stimulus approximately 12 to 15 inches in front of the suspect's face, slightly above the eyes and move it from side to side at a speed of no faster than two seconds to the left, two seconds back, two seconds out, two seconds back?

A Now that would be for --

Q For equal tracking so you're not going too fast. Wouldn't you be more specific like I was?

A I could be, but it's not necessary for that component of the test.

Q I thought you just told us if you don't tell them what speed to move a stylus back and forth that the speed of the stimulus could affect their ability to follow it and you called it a saccade? S-A-C-C-A-D-E?

A Yes.

Q So are you telling us for equal tracking the speed of the stimulus across the plain isn't relevant to even equal tracking?

A Correct.

Q Okay. If they were to move, when they are checking for equal tracking, the stimulus at a speed greater than 120 degrees per second, would they be able to determine if the eyes were equally tracking?

A Well, then they would --

Q Yes or no?

A Yes.

Q How about 300 degrees per second? Would they, would an officer be able to observe if the eyeballs were equally tracking an object moving at 300 degrees per second across the plain of the face?

A If the officer could move it that quickly, yes.

Q Not to jump ahead, but staying with the saccade theory, you told us, you mentioned studies have been done that you can move a stylus at a speed of 30 degrees to, up to 120 degrees, and a normal, sober individual should be able to follow it, right?

A Yes.

Q And you said studies have been done in support of that. I read your article that you wrote where you mentioned that. It was Footnote 14 that the study you refer to was *Ocular Movement In Primates*. Was the study that supported that speed, right?

A Yes.

Q Primates is apes, monkeys, gorillas and human beings, right?

A Yes.

Q Okay. How did they get the monkeys and gorillas and apes to follow the stylus? Were they holding a banana?

A No.

Q Now, when, what is the next step you do after equal tracking?

A After equal tracking, again, to some extent, the distance of the stimulus, position of the stimulus, speed of the stimulus during equal tracking are not relevant. But now, to start, to actually start the test, I would instruct the officer to use, with exactly the same verbiage that you just used for me, hold the stimulus 12 to 15 inches away from the suspect's face. Of course, the officer wouldn't say that, he would do this. Slightly above eye level.

Start by testing the left eye moving the stimulus from the center to the side in an amount of time, it takes about two seconds to get to the side, and move the stimulus back in the opposite direction, so it takes four seconds to go back, and as it crosses the midline, then assess the movement of the right eye, and then back again so that each eye is assessed twice.

Q Right. Each eye you look at individually twice for lack of smooth pursuit?

A Correct.

Q Then what is the next step to perform the HGN test correctly?

A So after that is completed the stimulus is brought

back to the center and 12 to 15 inches away from the subject's face. Then distinct and sustained nystagmus at maximum deviation are assessed.

Q What would you verbally tell the person to do?

A Follow the stimulus. My directions to the officer, my teaching of the officer would be move the stimulus at a comfortable speed. The actual speed itself is irrelevant, but at a comfortable speed that the suspect can follow. Makes no difference how fast or slow it is. That he can follow that brings the eyes out to the maximum position. Hold the stimulus there for a minimum of four seconds. Actually, in the trainings I conduct, I tell the officers to count to 1005 just so they get to that minimum of four seconds.

Observe, they do that for the left eye. Suspect's left eye. Then move over to do the right eye. Then check the left eye and right eye again.

Q So you repeat each movement twice for each eye for distinct nystagmus at maximum deviation?

A Correct.

Q And the correct way to do it is to hold the stylus, stimulus at the point of maximum deviation for a minimum of four seconds?

A Correct.

Q You yourself would agree that even in normal, sober

individuals that for the first one to two seconds that a stimulus is brought to maximum deviation there will be nystagmus, right?

A There could be in some. Yes.

Q That's why you have to hold it for longer than one to two seconds?

A Correct.

Q Then the next phase would be?

A The last component, of course, is to check for the onset of nystagmus prior to 45 degrees. Here the stimulus starts again from the midline, 12 to 15 inches out from the face, slightly above eye level, and the officers are instructed to move the stimulus at about half the speed at which they do the lack of smooth pursuit test. So it is a very slow movement to bring the stimulus out to a maximum angle of 45 degrees.

Q So you would tell them four seconds out if they were to reach 45 degrees?

A If they were to reach 45.

Q Then when they see the onset of nystagmus how long should they hold it at the onset point?

A One second is sufficient. To confirm when the stimulus stops the nystagmus is present. That is sufficient. That is a clue.

Q You would check each eye twice for each of those things?

A Right.

Q In your writings, you've said if it is done correctly following those steps, it would take anywhere from 50 to 70 seconds although the length of time, start to finish, isn't a component?

A Correct.

Q But all the other things about how to move the stylus, those are critical components to doing the test correctly?

A Correct.

Q All right. Now, according to your readings and your own previous testimonies, a person may display -- well, will display their clues generally in sort of a building block form? The more they drink, the more you'll see from one clue to the second to the third clue?

A Right.

Q It's a general proposition?

A Yes.

Q Not a hundred percent but as a general rule?

A Yes.

Q You will begin to see lack of smooth pursuit as the only clue beginning at BAC levels as low as .02, correct?

A Correct.

Q Then you will begin to see the onset, excuse me, distinct and sustained nystagmus at maximum deviation at BAC level as low as .04?

A Correct.

Q Marcelline Burns herself has, in fact, published literature that supports what I've just said and you've read that as well?

A Yes.

Q You would agree Marcelline Burns is authoritative and reliable in the field of horizontal gaze nystagmus, right?

A Yes.

Q Okay. Now, if you were to see lack of smooth pursuit in both eyes, and distinct and sustained nystagmus in both eyes, you are aware of the fact that under NHTSA standards officers are trained to say that person has failed that test, right?

A I am aware with the current manuals they, with regard to the standardized field sobriety tests, they have moved away from using the word pass or fail with regard to these tests.

Q But that is the testimony that is generally given?

A That is usually how it's characterized.

Q It's also true that NHTSA teaches that if the

officer sees four or more clues, they can, that would be an opinion that the person is intoxicated?

A Yes.

Q Even though the BAC could be as low as .04?

A Yes.

Q And do you know in Illinois that BACs less than .05 are presumptively not intoxicated?

MR. UPHOFF: Objection, your Honor. Is he asking the Court to take judicial notice?

THE COURT: Sustained.

Q All right. Now, is it your opinion that people at BAC levels of .04 are people you say are intoxicated? You?

A They could be. Some individuals could be. Yes.

Q So when you've used the word intoxicated here during your testimony, it would also be consistent with blood alcohol concentrations of .04 perhaps?

A For some individuals, yes.

Q Okay. And, now, in terms of the training of the officers to secure that your testimony about the validity, accuracy and reliability of the HGN test in the theoretical sense of the term reaches the street, you do know what training the officers go through, correct?

A Yes.

Q They don't see all these slides about caloric

nystagmus, and, you know, I don't know, albinos with pink eyes and everything else you have on there. They're not shown all these other types of nystagmus on these slides, are they?

A If I do the training, they are.

Q And you've seen the NHTSA protocol?

A Yes.

Q You've seen their slides, yes?

A Yes.

Q You've seen their training videos?

A Yes.

Q None of their training videos, none of their slides do they display albinos or one-eye'd jacks or, you know, conjunctivitis, none of those other types of nystagmus are displayed. Isn't that true?

A Not on the power points. No.

Q So, I mean, you know, although you may know it here today, NHTSA doesn't teach the officers that these other types of nystagmus, this is what they look like so you know how to differentiate them? They don't teach that? That's not in their protocol or curriculum, is it?

A I believe the discussion of those other forms of those other conditions --

Q It's a paragraph in a book?

A -- they're described in the book. Yes.

Q But nobody is shown it. There's no video, no pictures, no anything. This is what it looks like. Right?

A In general, I can't answer that question because I don't know the specific training tools.

Q Now, the course, if the police have taken a course in accordance with the NHTSA training, is three eight-hour days, right?

A I'm aware of that.

Q Yes?

A Yes.

Q After the completion of the course, they take a written exam, correct?

A Yes.

Q If they pass the written exam, as the jargon is used, they're certified in field sobriety testing including HGN, correct?

A They must also perform tests at an alcohol workshop.

Q They have to demonstrate proficiency for the test?

A For the test.

Q But I have here today, Mr. Citek, I'm sorry, I have the instructor's manual.

A Okay.

Q You've seen it before? You're familiar with it?

A I've seen it. I haven't look at it recently, but I

have seen it.

Q Isn't it true that the test the officer must pass, according to the NHTSA curriculum, is a 20-question test? You know what they, how they're tested for proficiency?

A Yes. I have seen it. I haven't looked at it recently.

Q The 20-question test is multiple choice and fill in the blank?

A Okay.

Q I'm going to ask, do you recognize this to be the test that is given to the students from the 2000, year 2000 NHTSA manual as well as the answers, yes?

A I'll agree to that. Yes.

Q To pass the test, they must get 80 percent correctly. If I've done my math, out of 20 they must get 16 of them right, yes?

A Good math.

Q See if you agree with me. Out of the 20, only four of the questions relate to horizontal gaze nystagmus. Do you want to check?

A I'll look that over. Yes.

Q Once they pass this singular test, then for the rest of their lives, according to NHTSA, they are able to say they are certified or qualified in horizontal gaze nystagmus

testing, right?

A If, again, that's how the state certification goes.

Q Well --

A I don't know about your state, but, again, certification I believe comes from the state not from NHTSA so --

Q Do you know of any law in any state that forces or requires somebody to be checked on any routine or periodic basis after they've passed this student, three-day student course?

MR. UPHOFF: Objection. Goes beyond this witness' expertise?

THE COURT: He can say that.

Q Do you know?

A I'm not aware of that. No.

Q Okay. And then how, is there anyone who, according to the NHTSA curriculum, checks -- excuse me. Let me go backward. You mentioned also they must demonstrate a proficiency in how to give the test, like physically gesture?

A Right.

Q According to NHTSA's curriculum, though, they would not fail or be prohibited from passing the course even if they failed to demonstrate a proficiency? It's not a requirement for passing, is it?

A Again, it's been a while since I've looked at those requirements.

Q And immediately before they take that 20-question exam, according to NHTSA's curriculum, there is a 50-minute study session for the 20-question test, isn't there?

A Okay.

Q You've been through the course, the student course, I presume, haven't you?

A Not in its entirety. I have read the manuals.

Q So you yourself have never actually passed the NHTSA student field sobriety testing course; is that a fair statement?

A That's a fair statement. I've never taken it, so, therefore, I've never passed it.

Q Okay. Now, I'm looking at some of these other articles that were provided to me. This 1977, *Field Evaluation of Behavioral Test Battery for DWI* from NHTSA.

MR. RAMSELL: This would be People's No. 9, your Honor, on their list.

Q (By Mr. Ramsell) I'm looking, you talked about statistical data although you didn't refer to this. Table 4 of this '77 study, was this the field study? Was this, in '77 was a laboratory study?

A '77 was the laboratory study.

Q Okay. In Table 4, have I read this correctly? Now, follow me here. Table 4, one of the entries says that when they, when the persons who are trained gave only the horizontal gaze nystagmus test and they recommended after the test that the person be arrested for DWI or DUI, that 15 out of 100 times the person's BAC was between double zero and .04. Have I read that correctly?

A You've read the table correctly.

Q Now, the next one of the statistics here says that when the horizontal gaze nystagmus test did not support an arrest for DUI that 20 -- excuse me -- that 53 times out of 99 the BAC level of that person was .10 or greater. Have I read that correctly?

A Now, there is a qualification there.

Q No. Have I read that correctly?

A You've read it correctly.

Q All right. So, if I can get that right, 99, 53 times out of 99 subjects where they were given the HGN test, they had a BAC of .10 or greater, but the tester said that person should not be arrested for DUI; yes? Is that, have I read that correctly?

A No.

Q Okay. Now, you would agree with me horizontal gaze nystagmus is not a vision test, wouldn't you?

A Right. You're right. It is not.

Q Otherwise, if it was a vision test, you wouldn't be able to have people take their glasses off before you administered it, right?

A Correct.

Q You're saying every time an eyeball jerks there is a quintessential moment of blindness?

A Yes.

Q All right. So you have the one where, you had that picture up where your wife is sitting behind you, and I notice you have a very nice convertible?

A I wish.

Q Was the top down?

A No, it was not.

Q Okay. Looked like a convertible. You're sitting there. You draw these arrows about 45 degrees, 35 to 45 degrees to look at the left-hand mirror. Forty to 45 degrees to look at the rearview mirror. You remember those arrows?

A Forty to sixty degrees.

Q Okay. But I just heard you say that a normal, sober individual, when they look to the right or to the left at those angles for one to two seconds, are going to display nystagmus even when sober at maximum deviation, right?

A That's if they go to maximum deviation. Forty to 45 degrees is not maximum deviation.

Q Yeah. And you told us 60 degrees is maximum deviation in most eyeballs, isn't it?

A Yes.

Q Okay. So everyone driving a car, when they move their eye to maximum deviation for the first one to two seconds, even sober, are going to have slight moments of blindness from nystagmus? Everyone?

A No.

Q Normal people will?

A No.

Q You said that for distinct nystagmus at maximum deviation, first one to two seconds, even normal people can have nystagmus?

A But I did not say 100 percent.

Q But even normal, sober people can?

A Yes.

Q Yet they're allowed to drive, wouldn't you agree?

A Yes.

Q And their driving is unimpaired, wouldn't you agree?

A Yes.

Q So that's why you have to hold it at that angle for four seconds to differentiate between possible normal, sober

individuals and those who might have that condition from alcohol? That's why the four seconds is critical, right?

A Correct.

Q Who do you know that drives a car stares in the rearview mirror for the count of four seconds? Anyone?

MR. UPHOFF: Objection, your Honor.

MR. RAMSELL: I'll withdraw the question. Leave it for argument.

THE COURT: Question withdrawn.

Q Sir, when you drive your car, you look in the mirrors for about one, two seconds as you constantly monitor traffic in all directions? That's how you drive I hope, right?

A Yes.

Q Okay. The resolution that you described from the American Optometry Association?

A Optometric Association.

Q Optometric Association. All right. Associations are part of life for doctors and lawyers and even judges? Most of those professions?

A Most professionals. Yes.

Q Let me see if I know how your association would work in that respect. There's, this is a voluntary association?

A Yes.

Q Optometrists aren't required to belong to it in order to hold a license?

A No.

Q Okay. So people pay their dues and then out of that a subset of Type A individuals decide they want to run for the House of Delegates and they are elected by the members. I don't know if they're Type A. But there's a House of Delegates elected by members?

A No. The House of Delegates is a full membership that comes to the annual meeting.

Q All right. You said how many people are members of this association?

A I think as I read from that letter from 2006, I think the number is still accurate, it is about 34,000.

Q So, at one point, now you're fellow of that organization?

A No. I'm a fellow of the Academy of Optometry. It's a different organization.

Q Are you a delegate or by being a member you're delegate?

A By being a member, if I show up at the annual meeting, yes.

Q So anybody who goes to the annual meeting, whether it be in Hawaii or the Virgin Islands or Kentucky, has the

ability to participate in the voting on resolutions?

A Yes.

Q And then a resolution is put in front of the general membership?

A Yes.

Q There is a voice vote taken? Perhaps, a hand vote if it is too close?

A Yes.

Q So at some point in 1993 during a meeting someone brought in a resolution about nystagmus, yes?

A Yes.

Q Was it subject to discussion or was it just voice vote?

A I was not there at the time.

Q Was there any critical debate that you're familiar with?

MR. UPHOFF: Your Honor, I believe he testified he wasn't there so he can't possibly be expected to answer the question.

Q Historically maybe he knows?

A No, I do not.

Q Is this binding on the members? For example, if they refuse to agree with this resolution, would they be compelled to be, you know, kicked out of the organization?

A No.

Q So the resolution wasn't subject to peer review, was it?

A I'm not aware of that.

Q Historically have you ever looked in to it to see if there was a subcommittee that studied it or put any more effort in to it than talking about it for whatever length of time at the general meeting?

A Again, as I said earlier, I only know the individuals who were involved, but I don't know the specifics of how that was passed.

Q Now, so, it's not like a bylaw of your association that is binding on all the individuals if they wish to remain a member?

A No.

Q Bylaws would be subject to greater discussion because of the mandatoriness, if you will, of the fact they're a bylaw?

A Right.

Q Resolutions can be used to also honor an individual who's, you know, wanted to be pointed out for some meritorious act, yes?

A Yes.

Q Has, you're not familiar with any other medical or

scientific association that has passed a resolution or bylaw similar to the one that you, that the Optometric Association has here, right?

A Correct.

Q Okay. Now, your position is that the presence of nystagmus, let me go backward for a moment. Marcelline Burns wrote in her study about the validation of field sobriety testing at or above .08 or more. That there is no proven correlation between HGN and the ability to operate a vehicle. You're familiar with that?

A Correct.

Q But today you're saying, you say that you have an opinion there is? That's what your testimony is?

A That's my opinion.

Q But even a person you consider to be authoritative and reliable in this field disagrees with you according to her writings, correct?

A I would say the converse. I disagree with her.

Q You disagree with her? She's spent the depth of her studying on this subject in the field, in the laboratory, in all other aspects, you would agree, is much deeper than your own, wouldn't you?

A Yes.

Q The fact that you disagree, though, simply points

out that authoritative persons in this area still have disagreements about even basic fundamentals of the value of the HGN test?

A Yes.

Q So what we're looking for is whether or not the field of people in HGN have been able to resolve their controversy so that this is across the threshold of reliability. But the controversy over whether it does or does not prove impairment still exists today in your field. Wouldn't you agree?

MR. UPHOFF: If I could ask counsel to move out of the line of sight between us and our witness.

Q Wouldn't you agree?

A I would need to give a qualified answer to that, but to your question I'll say no.

Q To my question?

A I'm sorry. To your question, I'll say yes, but it would be a qualified yes.

Q It still remains unsettled, yes?

A Yes.

Q Now, in your article in the DRE, you wrote that the most important principal of conducting the HGN tests is consistency, right?

A Yes.

Q One of those, then right below that, it's consistency, colon, and one of them is if the officer conducts the tests consistent with the standardized procedures, correct?

A Correct.

Q Now, that's, what, anecdotally have you seen videos of police officers on the streets that are performing what they claim is an HGN test?

MR. UPHOFF: Objection, your Honor. We're not here to determine how they're being performed by other officers in the field in the past. It's, the purpose of this hearing is to determine, if conducted properly, if the HGN test can give valid results.

THE COURT: Cross examination. I'll allow it.

Q You've seen videos of officers that have allegedly been doing field sobriety tests?

A I have testified in a civil case for the defense where I saw video of a deputy doing the testing incorrectly.

Q Is that the only time you've seen video of a police officer not doing the test as you've described or in accordance with the standardized procedures?

A Yes. It's not the only time it's been described to me, but the only time I've seen a video of it.

Q In this particular case, did the State show you the

transcript of how the officer in this case performed the HGN test?

A Again, it was a civil case. It was not a criminal case.

Q No. In this case?

A No.

Q *People vs. McKown*?

A No. I'm sorry. I misunderstood.

MR. RAMSELL: This is the part where we are in the offer of proof, because I know there is an objection, if I might.

MR. UPHOFF: I am going to object, so we are going in to an offer of proof at this time.

THE COURT: All right.

Q I'm going to show you, I'm going to show you a transcript of testimony in *People vs. McKown* taken on December 22, 2003, of Officer Klatt, K-L-A-T-T. Pointing your attention to Page 9, Line 21, starting with the question, "Could you tell us what you're looking for when you perform the HGN test?" If you could read that through to Page 12.

A Okay.

Q Just to yourself. You don't need to read it out loud.

A Okay.

Q All right. You've seen how Officer Klatt described the manner in which he gave the HGN test. Is his, Officer Klatt's HGN test, do you have an opinion whether that test is authoritative and reliable in your field? The one he gave?

A He simply was describing what he did.

Q Right. The one, the type of test he gave, do you have any opinion on its accuracy or reliability or validity?

A Just, based on this, it looks to be consistent with the test.

Q You would say Officer Klatt gave that test in accordance with the standardized NHTSA procedures?

A At least he described it in the correct order.

Q I'm asking you bottom line. You've read how he said he did it, what he did.

A But I have no clue as to how far he held the stimulus. I have no clue how fast he moved the stimulus. It doesn't say that there. I have no clue how long he held the stimulus when he did maximum deviation. It doesn't say that there, does it? So I can't give you an opinion whether he did it correctly or not. Not based on that.

Q He says, the third part of the test is before you take the object or my finger all the way to, all the way to the right or all the way to the left, some white of the eye is showing. That's called onset before maximum deviation. Do

you know --

A I didn't --

Q You ever heard of something called onset before maximum deviation? Read that again.

A It's the third part of the test.

Q Is there such a clue as onset before maximum deviation?

A I would speculate that the officer probably misspoke. It happens to the best of us.

Q I'm asking a very narrow question.

A No.

Q Is there a clue in your NHTSA test or your HGN test called onset before maximum deviation?

A No.

Q Now that you read that more clearly, I'm asking you to accept what he said is the truth. Not mistakes, but true. Can you say that this HGN test is valid, accurate or reliable as described?

A Based on his previous statement that there was still some white of the eye showing, that is typically one of the clues that officers are told to look for so that there's still some white of the eye showing to demonstrate they have not gone beyond 45 degrees. Based on that, that is a true statement.

Q Sir, all right. I don't want to beat you up, but you -- maximum deviation generally occurs in a normal eye at 60 degrees, yes?

A Right.

Q So at 59 degrees there should be some white still showing, yes?

A Yes.

Q If you saw onset prior to 60 degrees, is that a clue in the NHTSA HGN test?

A No, it is not.

Q So if an officer testifies that he is looking for onset prior to maximum deviation, that's not in accordance with the clues you know for an HGN test, are they?

A No.

Q So this deviation, if you will, from what you described earlier, you don't find to be significant?

A If you're taking a very narrow opinion like that, yes, it would be.

Q In fact --

A Very narrow reading.

Q -- isn't that an example where you have the big if in your article? The test is only valid if the officer conducts the test consistent with standardized procedures?

A Okay.

Q This officer, if that's how he did it, did not conduct the test in accordance with the standardized procedures you described, right?

A Correct. At least for that one piece.

Q In fact, it would demonstrate some lack of knowledge on his part because he doesn't say onset prior to a 45-degree angle, right? Yes?

A Taking a very narrow reading of the transcript, yes.

Q Okay. Now, this officer's testimony also indicates the first thing he did was the lack of smooth pursuit. Did you notice that in there?

A Yes.

Q So the officer doesn't say he checked for equal pupil size or for equal tracking. He says the first thing he did in that was the lack of smooth pursuit clue. Now, are you telling the Court that the fact that he skipped those is not significant?

A Again, I'm not sure --

Q If you're accepting this as true? Would you like to refresh your recollection again?

A May I please?

Q Sure.

A I would like to see what the line of questioning was.

Q Right here.

A I see it. I see it.

Q Did the officer ever say he checked for equal tracking or equal pupil size?

A No. But the question specifically --

Q Don't argue with me, sir.

A I'm not arguing, but I'm just telling you --

MR. UPHOFF: Objection, your Honor.

THE COURT: Sustained. Please do not direct the witness. If the witness is not responsive, direct your objection to the Court. It's not appropriate at all, counsel.

MR. RAMSELL: I'm sorry.

Q But you would agree with me it would be improper to skip the equal pupil size and equal tracking if you were going to do a valuable and accurate and reliable HGN test, correct?

A Yes.

MR. RAMSELL: That's the end of my offer of proof, Judge.

THE COURT: All right. Very good.

Q Let me just ask a few more questions here. You've never actually treated an intoxicated person for the purposes of your field of optometry. Fair statement?

A I'm sorry. You mean a patient who might have come in intoxicated?

Q Somebody comes in, and they, for one reason or another, need an optometrist, and you're there to provide them with the treatment optometrists have been trained to do, have you ever treated an intoxicated person under those conditions where it was in the field of optometry as opposed to your nystagmus field?

A No.

Q Have you ever been brought in to the emergency room where you've performed optometry on persons who you needed to determine if they were intoxicated or under the influence of alcohol or drugs?

A No.

Q So have you, and when you teach the, when you teach how to do the HGN test to your students, do you follow the NHTSA curriculum?

A Again, if I'm teaching it for optometry students on how they do clinical procedures, we do the tests a little bit differently, and, no, we do not follow the NHTSA curriculum procedures.

Q So for optometry the nystagmus test is not performed the same way as it might be for law enforcement purposes. Fair statement?

A Fair statement.

Q Okay. Now, when you're supposed to be, when a

person is checking for the onset of nystagmus prior to 45-degree angle, you need to know where 45 degrees is, right?

A Yes.

Q And a 45-degree angle would relate, in some respects, you can use a right angle to relate to it?

A Correct.

Q So, listen closely. I don't want to trick you. Where is the apex for the start, the zero? Is it on the nose? Twelve inches from the nose, is that the apex?

A No.

Q Or is the apex on the eye?

A The apex would be from the bridge of the nose.

Q Bridge of the nose?

A Bridge. That's not your bridge.

Q Right here is my bridge?

A Right here is your bridge. Between your eyes.

Q So zero is at the nose?

A Right.

Q And as you move it out to the side, the eye would be approximately how many degrees, ten degrees, between five and ten? Can you kind of agree with that?

A Well, how far out to the side are you moving?

Q I'm moving towards there and --

A Yes.

Q If I, so, why in the book, the student book here from NHTSA, and I'm looking at the one from the year 2000, Section 8, Page 8. Here they have the apex, not the nose, but the eye. You see that drawing where the line goes to the eye, through the nose in to the pupil of the eye? You see that figure?

A That's a profile of --

Q My narrow question is do you see the figure?

A I see the figure.

Q Do you see the line on the eyeball?

A Yes.

Q Okay. Now, if the center is intended for validation purposes to be the bridge of the nose, but instead the student is being taught that the zero is at the eye, that would throw off the 45-degree angle; would you agree?

A There would be a difference of a couple of degrees.

Q Is it two degrees or five to ten degrees.

A I haven't done the math, but I know it is a small difference.

Q Well, let me offer it this way. You know about, you know Mr. Tharp or you've heard of him?

A I've heard of him.

Q Okay. So we had Moskowitz, Burns, Marcelline Burns and Tharp. They were the three people who through the

Southern California Research Institute developed the field sobriety test battery. You agree with me historically, right?

A Yes.

Q And SCRI, as the acronym is referred to, they did all the NHTSA contract work to create, if you will, the three tests, walk and turn, one leg stand and the HGN, yes?

A Yes.

Q They performed all the field work, the lab work, the validations, right?

A Right.

Q You are also familiar with the Tharp's equation as it relates to HGN, aren't you?

A Yes.

Q Fifty minus angle of onset equals BAC. That's Tharp's equation, right?

A Yes.

Q So, Tharp, one of the three founders or originators or inventors, whatever phrase you want to use, he said that if you see an angle of onset of nystagmus at 45 degrees, that's the onset point, right on that, you can take 50 minus angle of onset, in my example, 45, remainder would be 5, that would equal .05 BAC. That's Tharp's equation in practice, right? That's what he was trying to assert?

A Keep in mind the equation that you cited is an

approximation of the equation that was actually published in that study.

Q Right. Fifty minus angle of onset equals BAC.

A That's an approximation.

Q So when you move the apex from the bridge of the nose to the eye for the start of the 45-degree angle, that would change the BAC using Tharp's equation for the onset point, wouldn't it?

A I haven't looked at it in that detail, with that level of detail, so I'm not sure that I can answer your question appropriately.

Q So what I want to ask you is if you're using the bridge and the figure in the 2000 manual is using the eye for the zero point, which one is correct, you or the figure in the book?

A Well, it all depends on the correlation, on the relationship that is drawn. Again, in the current teaching, at least when I teach it, I teach 45 degrees with respect to the midline, with respect to the bridge of the nose.

Q Okay.

A And I believe that is consistent with the current manuals.

Q Which manual are you referring to after 2000? Is there a manual after the year 2000 that the figure found on

Section 8, Page 8 has changed?

A I'm not aware of it. I know there are manuals since then. I'm not aware if the figure has changed.

Q Right. 2002. 2004. And I believe two in 2007. February and --

A 2006.

Q Yeah. Okay. Let me show you the one from the year 2006 then. This is the 2000, February 2006 manual. Here is the Section 8, Page 7. Same figure with the apex for zero. A line drawn straight to the pupil.

A Uh-huh.

Q Through the nose to the pupil, yes?

A Yes. The description of that diagram --

MR. RAMSELL: Judge, I have no question pending.

THE COURT: No question pending. Sustained.

Q Now, you would also acknowledge that other peer reviewed articles have indicated that the 45-degree angle can be effected by approximately five degrees due to the time of day?

A No.

Q Circadian Rhythms?

A No. That was not a peer reviewed article.

Q Have you ever testified regarding your position on whether that's true or not? I'll rephrase that. Do you agree

or disagree that there is literature out there, published literature, reflecting a five-degree change in the angle of onset after a certain time of day?

A I agree there is literature out there.

Q And you do not have the ability to disagree with that literature, isn't that true?

MR. UPHOFF: Objection, your Honor. He asked him whether or not he has an ability to disagree.

THE COURT: He may answer it if he can.

A If you are referring to the paper by Tharp that discusses circadian rhythm, if that is the one, I have had discussions with Dr. Marcelline Burns regarding that paper and, yes, I disagree with that conclusion based on the discussions with her.

Q But the author of that article is Tharp, one of the three that --

A Correct.

Q -- undertook the original validation studies of the HGN test?

A Correct.

Q So that's also subject to what one would call professional controversy or professional dispute, yes?

A Well, again, if I may, my communication with Dr. Burns indicated that after the publication of that abstract,

it was not a peer reviewed paper but rather an abstract, that they sought revocation of that article, but the journal went out of business, went out of publication before a retraction could be published for that piece. So Dr. Burns does not agree with that, and subsequent to my conversations with her, I do not agree with that conclusion either.

Q When did you have your conversation? What year was that?

A I'll take a wild, I have seen her at a number of conferences. I'll take a wild guess. 2000. 2002. I'm not sure. It's been awhile. It's been several years ago.

Q Because you previously testified under oath in Kansas about the angle of onset being affected during nighttime hours because of fatigue. Do you remember talking about that subject?

A I remember that was one of the questions during that, but I don't remember what my testimony was.

Q You were asked the question, "But you have also never seen any studies that directly dealt with the angle of onset except for that study?"

You answered, "Correct."

The next question put to you was, "Okay. So there's nothing to disprove the fact that it could effect angle of onset by five degrees?"

And your answer was, "The only thing I'm aware of is anecdotal evidence from officers that I've consulted with." That was your answer then under oath.

A Okay. I don't see how my answer today is inconsistent with that.

MR. RAMSELL: I move to strike the extraneous part.

THE COURT: Sustained.

Q Now, in your article that you referred to on direct, *Nystagmus Testing In Intoxicated Individuals,* you did note there is, there is a type of nystagmus in vestibular diseases, multiple sclerosis and a rare case of glaucoma occurring in primary gaze or with non-upright head positions, right?

A That's what I testified to earlier. Yes.

Q You also have loss of smooth pursuit with conditions including diabetes, glaucoma, multiple sclerosis and optic neuritis?

A Yes.

Q Each of these cites to other studies that you refer to?

A Yes.

Q Viral infections such as cold and flu will affect eye movements or can I should say?

A Can.

Q Depending on how sick the person is I guess?

A Correct.

Q And it's your suggestion that office -- in some certain situations, such as accidents, officers must be sure the impairment and eye signs are not due to a medical emergency such as head injury, stroke, seizure or inappropriate or inadvertent visual or vestibular stimulation such as optokinetic nystagmus or positional nystagmus, right?

A Correct.

Q So in the curriculum that they're taught with NHTSA, are they shown how to avoid mistaking optokinetic nystagmus with horizontal gaze nystagmus?

A Yes.

Q And they're told don't have any flashing or strobe lights on while conducting the HGN test, right?

A That's one of the possibilities. Yes.

Q Well, if they're told to turn them off, that's because an officer with 24 hours of training can, according to NHTSA, mistake HGN for optokinetic nystagmus, right?

A I'll give you the benefit. I think you want to rephrase that question.

Q I'm actually going to go backwards. Let me kind of do this. The training that an officer gets is, the curriculum for NHTSA is three eight-hour days?

A I'll answer your question, but I think you meant to

ask --

Q No. I'm on a new question.

A Okay.

Q Three eight-hour days. Total of 24 hours of training. Now, you yourself, though, probably devoted easily 15 years to this subject?

A Parts of.

Q Do you think you know more today than you knew after the first 24 hours on the subject of nystagmus?

A Yes.

Q Okay. And do you think after your first three eight-hour shifts of studying this subject you had the ability to distinguish alcohol-related nystagmus from other causes of nystagmus? You? As an optometrist?

A Yes.

Q Okay. Was that, were you able to distinguish because of the training you had in the 24 hours of nystagmus training or was it from the optometry school or was it both?

A I'm not sure I can separate the two, so I don't know quite how to answer that.

Q Well, you would, your position would be a properly trained optometrist should be able to recognize alcohol induced nystagmus from others?

A Yes.

Q Right?

A Yes.

Q And that it should only take 24 hours of training for a police officer to completely perform that same activity as well as the optometrist?

A I'm not sure I can answer that question.

Q Well, alcohol intoxication, if you will, is a condition of the body? It's a medical condition?

A Yes.

Q And, as such, to declare somebody being intoxicated falls within the field of what would also be a medical diagnosis, yes?

A Yes, it could.

Q And you would say that the amount of training an optometrist has on nystagmus a police officer could gain as competently in three eight-hour shifts? Is that what you're telling us?

A No.

Q You wouldn't say that, would you?

A I wouldn't say that. No.

THE COURT: In terms of your cross, do you have any estimate on how much is remaining?

MR. RAMSELL: Could I have one second? I'm starting to beat that horse. I sort of recognize it myself.

Q (By Mr. Ramsell) Does the American Optometric --

MR. RAMSELL: I think I can wrap it up in less than five.

THE COURT: Hold on. Anybody need to make a phone call or anything?

THE WITNESS: I do have a flight in just over an hour. I'm not sure if there is a second flight out.

MR. RAMSELL: I forgot. The State might want to redirect. I totally forgot.

THE COURT: Let's talk off the record.

(Whereupon, a discussion was held between court and counsel off the record.)

Q (By Mr. Ramsell) Does the American Optometric Association do anything to ensure that law enforcement officers are properly trained to give the HGN test? The association itself?

A No.

Q Just to ensure, satisfy my partner here. On the lack of smooth pursuit phase, there is a required speed that the stylus should go out and back and forth to ensure that it's not too fast and doesn't create artificial lack of smooth pursuit?

A Yes.

Q And generally your suggestion is speeds between 30 degrees and up to a 120 degrees per second should be acceptable?

A No.

Q What speed do you recommend?

A No more than 40 degrees per second.

Q Okay. And lack of smooth pursuit has been known to correlate to a .02 BAC in the literature?

A Yes.

Q Bottom line, if the HGN test is not administered as you've described it, or interpreted as you've described the manner in which it should be interpreted, you do not have a position on it being valid under those circumstances, right?

A Right.

Q In fact, you could not say it was valid in other words?

A I couldn't say either way if I didn't observe it. If there wasn't a video or something for me to --

Q You only know of one correct way to administer and interpret an HGN test, yes?

A Yes.

Q That's the one that would be found in the National Highway Traffic Safety Administration's Sobriety Manuals?

A Yes.

Q All right.

MR. RAMSELL: We're good. I have no further questions.

THE COURT: Redirect?

MR. UPHOFF: Your Honor, if I could have just a minute, so I can be more brief.

REDIRECT EXAMINATION BY

MR. UPHOFF

Q Doctor, you were asked some questions about Marcelline Burns. Just by way of clarification, is Marcelline Burns an optometrist or ophthalmologist?

A No.

Q Neither?

A Neither.

Q And you stated that in your clinical procedures in instructing your students that you do a test that is similar but not the same as the HGN test as it is administered by law enforcement, is that correct?

A Yes.

Q But what is your opinion of whether or not the HGN test accurately elicits the results that you feel are necessary?

A I think it does so.

Q The HGN does accurately elicit those results?

A Yes.

Q Why are the tests different that you use in your clinical study?

A There are certain things that we would look for as far as eye movements that go beyond what the HGN test checks for. The HGN test essentially only checks eye movements from a horizontal direction, horizontal plain. We check for movements in the vertical plain as well and also in tertiary positions, up and to the side, down and to the side, et cetera. So we go beyond what the HGN test would do.

Q And briefly --

MR. UPHOFF: If I may approach, your Honor?

Q The 2006 manual, I have a copy of it here from NHTSA which was admitted in to evidence. I'm going to show you in this, it's the same section, Section 8, but I believe this is Pages 6 and 7. In looking at this in instructing an officer on how to perform the onset prior to 45, where does it state that the starting point is for that test?

A Page 6 on the third paragraph, it says, to use this device, and it shows a template with a 45-degree angle. Hold it up so the person's nose is above the diagonal line.

Q Even before that, when it's not referring to the template but referring to the test in general, where does it list the starting point as?

A That would be from 12 inches in front of the suspect's nose.

Q And even earlier, as Mr. Ramsell was reciting for you how the test should be instructed, he himself said that it should be held 12 to 15 inches out from the nose, isn't that right?

MR. RAMSELL: Wait. I'm not testifying so I object to the form.

THE COURT: Sustained.

Q So, as far as you're aware, in the 2006 NHTSA manual, when the officers are being instructed, they're being instructed as to holding the stimulus out from the nose?

A Correct.

Q All right. Also, referring to the NHTSA study, you were asked some questions about a chart, I believe it was Table 4. You stated that you had a qualification for your answer, but you weren't able to give it. Could you give us what your qualification was for the results on those tables?

A Certainly. In 1977, for that study, for the gaze nystagmus component of the sobriety testing, they only did one component which would be equivalent to the third part of the current test. So they only check for onset prior to 45. That's what they call alcohol gaze nystagmus.

So for that test they did not use the same

scoring criteria. They did not use the same number of clues. They did not use the same protocol as is done today. So they did not check lack of smooth pursuit. They did not check on nystagmus at maximum deviation.

As a consequence, some folks who might be at 10 or higher, a .10 BAC or higher, may have had those clues, but they were just never looked for. They just didn't evaluate those. And if you only evaluate the third component, it may or may not be there depending on the individual.

Q As you testified earlier, the three components of the HGN test should be done in that order, and if combined, that's when you get the valid results?

A Yes.

Q And do you believe or it is your opinion that an officer can become proficient in administering and interpreting the results of the HGN test?

A Yes.

Q And that they can differentiate alcohol-induced nystagmus from other types of nystagmus?

A Yes.

Q So when performed correctly, is it your opinion that the HGN test is a reliable indicator of alcohol impairment?

A Yes.

MR. UPHOFF: Your Honor, at this time, there was

journals that we referred to in our direct, but we didn't go in to more detail with them. I want to introduce those at this time. I don't know if you want to do it now or allow any recross before 5:20. We just want to list off what they are, enter them in to evidence and give the citations to the court reporter.

THE COURT: Recross?

MR. RAMSELL: Limited.

RECROSS EXAMINATION BY

MR. RAMSELL

Q So the part of the manual where it says the starting point for the 45-degree angle, the zero point is, it says under the suspect's nose?

A That's where the template is held, under the nose.

Q What template are we talking about?

A Well, you're reading from the manual on how students are first instructed how to practice achieving a 45-degree angle.

Q But doesn't this manual also recommend that once a month they should return to the template? Recalibrate themselves so to speak?

A Again, I have not read it in a while. So if it says it in there, then we'll trust the officers to do that.

Q Even if you start wherever, shouldn't the zero point

from the eye for 45 degrees angle still be, the apex should sit on the eye itself?

A Again, that would be one interpretation, but if you're looking at Tharp's equation, how it is used and other similar equations, how it is used, it's based off that center midpoint as a reference.

Q But it's the angle of the eye we're looking at not the angle of the nose?

A Correct.

Q So the eye should start out, straight ahead is zero, yes?

A Forty-five degrees refers to the conduct of the test, not the position of the eye.

Q Forty-five degrees from what? Is it the angle of the eye pointing outward 45 degrees?

A Again, at that distance, at that distance is a small, I know I have done the math on that, but I don't have it in front me right now. It is a few degrees difference.

Q But five degrees difference, according to Tharp's equation, is the difference between .05 and .10? That's five degrees, right?

A Yes.

Q So even though it's small or insignificant to you, the numbers relate to blood alcohol concentration as I've

described, yes?

A But again the equation --

Q So is the 45-degree angle, according to the studies, from the eye starting at a zero point or slightly tilted towards the bridge of the nose which would be like negative five?

A Right. It's from the eye slightly turned in toward the nose. That's the correlation, that's how the equations were determined.

Q So is it zero when the eyeball is looking slightly -- the right eye would be looking slightly to the left to go to the nose, is that zero or is that negative something?

A That's zero. On the calibration of those equations, how they were determined, that's the zero position.

MR. RAMSELL: I have no other questions.

THE COURT: All right. Thank you very much. You may step down. Thank you.

MR. UPHOFF: Your Honor, in terms of introduction of these articles, do you want me to simply give the citations to the reporter or do you want --

MR. RAMSELL: They can just hand them in as exhibits with the cover list. I have no objection as long as they're as represented on the list. That's fine.

THE COURT: All right.

MR. RAMSELL: May I make a copy of that test that I gave to you because the one I handed in, I think I handed it as an exhibit.

THE COURT: All right.

(Whereupon the State's Exhibit Nos. 2 through 23 were admitted into evidence.)

WHICH CONCLUDES THE REPORT OF PROCEEDINGS HAD ON SAID DAY IN SAID CAUSE.

IN THE TENTH JUDICIAL CIRCUIT OF THE STATE OF ILLINOIS

PEORIA COUNTY, ILLINOIS

REPORTER'S CERTIFICATION

I, **MICHELLE FARNEY, CSR-RPR**, an Official Court Reporter in the Tenth Judicial Circuit of the State of Illinois, do hereby certify that I reported in machine shorthand the foregoing proceedings had before the **HONORABLE MICHAEL E. BRANDT**, in the above-entitled cause, and that I thereafter caused the same to be transcribed into typewritten form which I now certify to be a true and accurate transcription of same.

Dated this 19th of March, 2008.

Michelle Farney, CSR-RPR
Official Court Reporter
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