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THE COURT: You guys ready to proceed?

MALE SPEAKER: Yes, Your Honor.

THE COURT: Let's go right to the witnesses.

MALE SPEAKER: Commonwealth calls Dr. Karl Citek.

(WITNESS DULY SWORN)

THE COURT: Thank you, sir. Have a seat right there.

THE WITNESS: Thank you, Your Honor.

Q. Dr. Citek, state your name for the record, please.

A. Karl Citek.

Q. And where are you from, Dr. Citek?

A. I currently live in Hillsboro, Oregon, just outside of Portland.

Q. Okay. Can you tell the Court about your educational background?

A. Yes. I have a Master of Science and Vision Science degree from State University of New York, College of Optometry. I have a Doctor of Optometry degree from the State University of New York, College of Optometry. And a Doctor of Philosophy degree in Vision Science from the State University of New York, College of Optometry.

Q. Okay. And who are you currently employed by?

A. I'm a full-time faculty member at Pacific University College of Optometry in Forest Grove, Oregon.

Q. Okay. And do you have any specific licensure?

A. Yes. I'm licensed to practice optometry in the state of Oregon.

Q. Okay. Are you a member in any professional organizations, sir?

A. Yes. I'm a fellow of the American Academy of Optometry. I'm a member of the American Optometric Association of the Optical Society of America, of the Association of Research and Vision Ophthalmology and some local societies and local -- local organizations, as well.

Q. Okay. Have you done any research into the effects of alcohol and/or drugs on the central nervous system?

A. Yes, I have.

Q. Okay. And what are those? Have you done any peer review papers?

A. Yes, I have. Two studies that have been published, one in 2003 investigating the effects of

posture, posture of the subject on the -- conducting the HGN test and the (inaudible) Horizontal Gaze Nystagmus Test, excuse me, looking to see if there was a difference if the subject was standing versus seated versus laying down. And we determined that there was none. And also we did a study that was published in 2011 looking at the effects of sleep deprivation, being awake for at least 24 hours to see if it -- if that would have any effect on the field sobriety tests, including the HGN test, and we concluded also that there was none.

Q. Okay. Did you do anything with regard -- or have you done -- or participated in any research or any studies with regard to DRE?

A. Yes. We've published a paper in 2001, I believe that was, looking to see whether Drug Recognition Officers could use just face sheet data, just the objective data that was -- that is gathered during a DRE evaluation to see if they could determine first if the data were consistent with impairment being present. If the officers could identify that. And then if they could draw an opinion as to what might be the impairing substance if impairment was present. We found that with just looking at the face sheet data alone, not seeing the

suspect, not speaking with the arresting officer nor anyone else that the officers did a very good job, much better than chance would predict on recognizing that impairment was present and also, for the most part, calling the correct -- forming a proper opinion as to what drug possibly could be causing impairment.

Q. Have you published any other articles besides these?

A. Certainly. Numerous articles in other fields and other related fields to my profession and my job, but all unrelated to field sobriety testing and HGN and DRE.

Q. Have you ever lectured on the effects of alcohol and/or drugs on eye movement?

A. Yes, I have, numerous times. I've lost count, I think it's well over 150, maybe 200 times over the past 15 years, including here in the Commonwealth of Kentucky several times.

Q. Okay. Have you previously been qualified as an expert in any hearings or court cases?

A. Yes.

Q. Okay. Have you ever been qualified as an expert in any hearings or court cases in the state of Kentucky?

A. Yes, I have.
Q. How many?
A. I think on last count it was three hearings -- three hearings and a consultant to the prosecution in one hearing where I wound up not testifying.
Q. When you said hearings are you referring to Daubert hearings?
A. Yes, I am, sir.
Q. Okay. And what counties were those?
A. If I remember correctly it was Nelson County, Hart County and Jefferson County.
Q. All right. Can you tell the Court what's the difference between an optometrist and an ophthalmologist?
A. An ophthalmologist is a medical doctor who goes through four years of medical school, learns about general anatomy and physiology and the body. And will then do a residency that lasts anywhere from one to three years after medical school. During that residency the ophthalmologist learns about diseases of the eyes, doing surgery on the eyes. For the most part, treating eyes, treating significant problems with the eyes. Using drugs either on the eyes directly or systemically, and of

course also doing surgery.

Optometry, on the other hand, is an independent health profession. We go through full undergraduate education and four years of optometry college which involves much of the same background training, the anatomy and physiology of the eyes and of the body, same as the ophthalmologist would get, but with specific emphasis on recognizing and treating certain diseases, but also recognizing how the eyes work together and how the eyes work with the brain. As much of a perceptual function and such that optometrists, yet specifically that most ophthalmologists, and here I'm generalizing because I know there are exceptions, but most ophthalmologists do not get.

Q. Okay.

MALE SPEAKER: Judge, if I may approach the witness.

Q. Dr. Citek, if you can, can you identify that document for me, please.

THE COURT: He's representing you already have a copy.

MR. SUHRE: Yes. Yes, sir.

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

Q. And who prepared that?

A. I did.

Q. And is that curriculum vitae up-to-date for the most part?

A. Reasonably so. There are a couple of recent -- it has all of my peer review publications in here. It does not have some of the recent trainings that I've spoken at, but for the most part, yes.

Q. And does it fairly and accurately reflect your educational background and work experience as well as your lecture series and publications?

A. Yes, it does.

MALE SPEAKER: Your Honor, we'd move to introduce Commonwealth's A.

MR. SUHRE: No objection.

THE COURT: Admitted.

Q. Dr. Citek, I'm also handing you a series of three documents here. Can you identify those for the Court, please.

A. Yes. One is the paper that I published along with some of my colleagues in 2011, and that was entitled Sleep Deprivation Does Not Mimic Alcohol Intoxication on Field Sobriety and Testing is one of the studies that I referred to earlier. The other is Nystagmus Testing in Intoxicated

Individuals. This was the study from 2003 that I referred to earlier. And the last is a monograph that was put out by the American Prosecutors Research Institute published in 2003 with background information on the HGN test, and how optometry would fit into the role of supporting law enforcement.

Q. Would you --

A. And the conduct of the HGN testing, excuse me.

MALE SPEAKER: Your Honor, I move to introduce as Commonwealth's B.

MR. SUHRE: Collectively as B?

MALE SPEAKER: Collectively as B.

THE COURT: Be admitted.

Q. Doctor, if you can, tell the Court about eye movements and what we've been calling HGN or the Horizontal Gaze Nystagmus test?

A. Certainly. The Horizontal Gaze Nystagmus test is a screening test that in this context that officers will do commonly at roadside, or maybe in some other situations like drug recognition expert officer might do this at a station house as part of the DRE evaluation. But it is a screen test to determine if certain substances that have known effects, known and consistent effects, on eye

movement, those substances are present in the individual being tested. Those substances of course include central nervous system depressant drugs of which alcohol is one, inhalant substances such as volatile solvents, volatile organic compounds that you might find in paint or glue, and also anesthetic gasses, and also as well dissociative anesthetics including phencyclidine or PCP and dextromethorphan. They all have similar effects on parts of the central nervous system that control our eye movements.

Eye movements -- the HGN test, in general, is not a problem with the eye muscles, it is a neurological problem. What controls the eyes and the positioning and movement of the eyes are nerves that begin in the brain stem, which is the upper part of the spinal cord, that's one part of the central nervous system, that's where the ultimate control and neurological impulse to the eye muscles comes from. What controls the brain stem, what controls nerve centers that are located in the brain stem includes the cerebellum, which is a processing center, or integration center of the central nervous system. The cerebellum combines information from other sensory -- from multiple sensory systems such

as vision when we see, our hearing and balance, and also appropriate perception or touch. And depending on the inputs from those, for example, it will direct the eyes to move in a certain way or to maintain position in a certain way. What intoxicants, and I'll use the term broadly, as broadly as possible, what the relevant intoxicants will do in this case is disrupt how the cerebellum and the brain stem function. As such, an individual may be able to maintain his eyes when he's under the influence may be able to maintain his eyes in a straight ahead position without movement, but if he tries to move his eyes to the side or maintain looking off to the side he may not be able to do that very well. If he does not do that very well, in general the eyes will drift back towards center and then move back quickly in the direction which the individual wants to look. This happens rapidly enough, and that rapid movement is termed nystagmus.

The intoxicants that I mentioned consistently, when they're at a high enough level for the individual will consistently cause nystagmus in a number of different ways. One is to cause nystagmus becomes a significant nystagmus when the

individual tries to look as far to the side as possible, what's typically known as maximum deviation or end point nystagmus. Another is to cause nystagmus when the individual is looking at some position closer than, not quite as far but closer than maximum deviation, that's typically referred to as gaze nystagmus, or sometimes gaze evoke or gaze induced nystagmus in the medical literature, those are all synonymous terms.

In addition, at a high enough level for -- at a high enough level of intoxication for the individual, those substances may cause vertical nystagmus where an individual looks straight up the eyes have difficulty maintaining that upward position, drift down and then bounce up as it were. So those are different types of nystagmus that will be caused by intoxicants.

In addition, and even early, even prior to the causation of those types of nystagmus, the drugs will affect smooth pursuit ability. Smooth pursuit eye movements occur when an individual tries to follow a target that is moving relative to him, so either the individual is stationary and the target is moving across his visual field, or the target might be stationary and the individual might be

moving. A relevant example might be if you're driving down the road and trying to read a sign that is posted on the side of the road, as you're driving past it to be able to read the sign and see all of the small letters or numbers that might be on the sign you need to use smooth pursuit eye movements, otherwise your eyes would not be able to stay on the target and you would not be able to see what was on that sign. So this is directly relevant in the driving scenario. If smooth pursuit is not possible when there's relative motion between the observer and the target, then the eye movement system will use the faster movement on the saccade, and that's spelled S-A-C-C-A-D-E. That fast eye movement changes the position of the eyes very quickly but it does not allow vision, it does not allow visual perception during the movement.

One of the first things that occurs with intoxication, even at low levels, is loss of that smooth pursuit ability. So if a target moves across an intoxicated individual's visual field, or field of view, then rather than moving smoothly across the field, the eyes will seem to bounce or jerk across the field much like the analogy that I like best is a windshield wiper moving on a dry windshield. The

rubber catches and then moves very quickly, as opposed to smooth pursuit movements which will look like a windshield wiper on a wet windshield, moves smoothly across that. The Horizontal Gaze Nystagmus test, itself, involves first testing -- well, prior to the start of the test an officer should conduct certain pretest checks. Those are designed to ensure that -- that the individual does not have some type of injury, either to the eyes or maybe to the body or brain that would preclude doing any parts of the test. Those pretest checks include checking for equal tracking to make sure that the eyes can move together and that they have full range of motion. Well, the officer will also check to see if the pupils are roughly equal in size. If they are not, that could indicate a head injury of some sort, whether it's an external injury or an internal injury like a stroke. And the officer will also check to see for presence of what law enforcement community calls resting nystagmus. What medical community refers to as nystagmus and primary gaze.

What an officer does not expect to observe in an intoxicated individual is nystagmus when the individual is looking straight ahead. Intoxicants generally do not cause nystagmus with an individual

simply looking straight ahead. That usually would be an indication of some type of medical condition. Now, whether it's a disease or a congenital condition that the individual is born with, or because of injury, obviously the officer can't make that distinction, we're not asking him to. But, in general, then, the officer would not continue with the test because you might not be able to distinguish what is causing the nystagmus. It may -- and intoxication may or may not be present.

So those are the pretest checks first, so checking for the presence of equal tracking, checking for roughly equal pupil sizes and making sure that resting nystagmus is not present. Then the officer will actually conduct the test.

The stimulus is typically held 12 to 15 inches from the suspect's eyes, and there has been research done to see if other test instances have any bearing on the test, either further from the suspect or closer to the suspect. Basic conclusion is that, no, it does not. 12 to 15 inches is a comfortable and very safe distance for the officer to conduct the test, because it maintains about an arm's length distance of the officer from the suspect but allows the officer to remain in control

of the suspect. Anything farther away, the officer is not in control of the suspect. Anything closer the officer comes unsafe -- must come then unsafely close to the suspect. So 12 to 15 inches is protocol, but if it's done at a different distance, it really will not affect the test that much, not appreciably, let's say.

The officer will move the stimulus first to the suspect's left, checking the left eye for lack of smooth pursuit. Then he'll move the stimulus at a speed of approximately 30 degrees per second. If the head is still, the eyes can turn to either side by an angle of approximately 60 degrees. So it should take about two seconds for the officer to move the stimulus to the suspect's left. That's a speed of approximately 30 degrees per second. And then the officer will move to the suspect's right, all the way to the right. Covering a -- the space of approximately 120 degrees, they'll do that in about four seconds, again maintaining a speed of about 30 degrees per second.

As such, as soon as the officer crosses across the middle, he'll change his attention from looking at the left eye to looking at the right eye to see that individually both eyes either have

smooth pursuit eye movements or they do not. The officer will do these movements checking each eye twice. About 10 percent of otherwise normal sober individuals are not going to be able to follow with smooth pursuit eye movements at that speed at which it has is conducted. So they will be seen to have lack of smooth pursuit even when they're sober.

The deciding factor there, the component -- the main component there is we must ask why the officer requested the test to be done in the first place. Keep in mind that the HGN test is a screening test, it is not going to be proof -- proof positive of intoxication or sobriety. But if indicators are present that an officer knows to be consistent with intoxication, then -- or if they're absent they would be consistent with sobriety, the officer would make the appropriate call.

In all cases, the officer must have prior to conducting the HGN test or any other field sobriety test the officer must have some reasonable suspicion of impairment, either bad driving that is consistent with intoxication, physical indicators like bloodshot watery eyes or odor of alcohol on the breath, or other physical indicators such as fumbling for the license when being asked to

retrieve it, or even not being able to answer questions while retrieving the license, or not being able to retrieve the license while being asked -- while answering questions.

Q. If he doesn't have this preamble that you're looking for, he won't have nystagmus problems?

A. Well, the -- if -- if the individual has not previous -- has not prior to the start of the test exhibited any signs or indicators that an officer is taught to be consistent with intoxication, then the officer would never request to do the test in the first place. At least all the trainings that I've done with officers all around the country, I know that the instructors instruct in that manner, and I have taught that, as well.

Q. Dr. Citek, is that the same predicate then for administering any other standardized field sobriety test like the walk and turn or the one leg stand?

A. Yes, it is.

Q. Okay. And in legal short term, I guess we would call that probable cause to do the test, you're to believe the person is under the influence to begin with; is that correct?

A. I think it's reasonable suspicion of impairment.

Q. Reasonable suspicion. Okay.

A. In Oregon we're a little bit strange because we call that probable cause as well, but we mean reasonable suspicion and it's --

Q. So, you know, an officer pulling over someone, say just on a routine traffic stop for speeding, if you're -- the way you train, or the way you've been training is that if they don't suspect alcohol or drug involvement or some sort of impairment, then they wouldn't administer this test even to begin with?

A. Correct.

Q. Okay. So, if I was just doing 25 miles an hour over the speed limit and I didn't smell like alcohol, I was just driving fast, the officer most likely would not give me that test?

A. There would be -- I would see no reason for the --

THE COURT: Well, what if he does without that preamble, you don't -- you think there's something else that caused the nystagmus problem?

A. Well, there could be other things that cause nystagmus. There are very few things, other

than intoxication that cause the types of nystagmus that the officer is looking for. So that's the first thing. But if the officer were to do that, and were to write in his report and admit to you under oath that he did not have any of those other indicators present, that you just wanted to do the test just to see what would happen, I think you, Your Honor, you'd rightfully conclude he was on a fishing expedition, and regardless of the results you probably would not let that case go forward.

THE COURT: We're not here about probable cause, we're here about whether or not nystagmus, in and of itself shows alcohol -- is caused by the alcohol influence, right?

A. Correct. But we have to distinguish the different types of nystagmus.

THE COURT: Okay.

A. So the different -- as I mentioned before, the different types of nystagmus that an officer expects to observe are usually not consistent with any other conditions or injuries or diseases. They might be individually, but not as a totality, not in their entirety.

THE COURT: I don't understand.

A. Well, if I may, the -- so the first clue

that an officer would check for is lack of smooth pursuit. Yeah, that's not a type of nystagmus, that's just an out of line eye movement but it's part of the HGN test. In general, at low levels of intoxication that will be the first clue that will be evident, that will be present. An officer should expect to observe that if he truly believes that intoxication is present. The second clue, the second test then is to check for distinct and sustained nystagmus at maximum deviation. This is the nystagmus that occurs when someone looks all the way to the side, as far as possible to the side. At this point the officer moves the stimulus out to that maximum lateral extent for a minimum of four seconds.

In general, the nystagmus will be very easy to detect, and it must sustain, it must be constant during that entire testing period and that entire testing time. There is a phenomenon that about 50 to 60 percent of normal sober individuals will exhibit referred to as end point nystagmus. They look out to the side and try to hold their eyes out to the side. They'll have a couple of bounces, a couple of real quick movements of nystagmus. They usually will be small in amplitude, therefore not

distinct, and they usually go away within one to two seconds so it's not sustained.

So if an officer were to observe that, nystagmus was initially there but went away while the suspect was continuing to look to the side, you would say the clue that he's looking for is absent. Even though there was some nystagmus initially, the actual clue he's looking for, it must be sustained. It must continue for the entire testing period, not just one or two seconds. So that's a -- that's the hallmark distinguishing component there on that test.

The third component of the HGN test is checking for the onset of nystagmus prior to 45 degrees. Here, the officer will move the stimulants very slowly at about half the speed or less at which he conducted the lack of smooth pursuit component of the test and look for the first presence of nystagmus before he would get to approximately a 45 degree angle. 45 degree angle can be very easy to estimate and very easy to practice, whatever distance you are from the suspect's eyes, that would be the distance that the stimulus would need to move over, and that would describe a 45 degree angle.

So if the officer holds the stimulus 12

inches from the suspect's eyes, you'd need to move 12 inches over to describe that 45 degree angle. In general, that's going to be about an inch or so beyond the shoulder for most people, for most average sized individuals. If that is present, again, the gaze nystagmus as I referred to earlier, if that is present, then the third clue will be present. In general, yes, there are exceptions, but in general for everyone I've seen, if an individual has onset of nystagmus prior to 45 degrees because of intoxication, he will also have nystagmus at maximum deviation, he will also have lack of smooth pursuit. If someone has gaze nystagmus, that onset prior to 45, without the earlier clues being present, then I would attribute that as a medical or neurological condition. And that's what I mean by the totality, that someone who has a medical or neurological condition may exhibit one or another of the clues, but they'll be there in isolation.

So someone could have lack of smooth pursuit naturally when sober. Someone could have gaze nystagmus naturally, someone could have vertical gaze nystagmus naturally, but if they have it in isolation without any of the other clues, and certainly without any other indicators that would be

consistent with intoxication, then the officer will rightfully not conclude that the suspect is impaired because of intoxication. There could be something else causing the impairment but not intoxication. It could be -- yes?

THE COURT: What effect do they think they have on the cerebellum?

A. It depends, it could be -- they could have an effect on the cerebellum --

THE COURT: Would blood pressure affect it?

A. It should not but maybe blood pressure medications might.

THE COURT: Say that again.

A. Blood pressure medications, the drugs that someone takes. Because it affects blood flow, yes, sir.

THE COURT: And you don't really -- I mean you're not a neurologist?

A. No, sir.

THE COURT: So a lot of things could affect it that maybe you don't know, or --

A. Well, there are --

THE COURT: Any diseases like Parkinson, onset of Parkinson, onset of blood pressure

problems, stuff like that? Could that affect it if it's undiagnosed?

A. No, it will not, sir.

THE COURT: Will not?

A. Will not.

THE COURT: Does brain disorders?

A. They are but they're not going to affect the brain in the same way that intoxication does.

THE COURT: Okay.

A. So, yes, there may be other effects, there may be other noticeable physical impairments, but not as far as the eyes are concerned.

THE COURT: Okay.

A. Yeah.

THE COURT: Meniere's disease?

A. Any problem with the vestibular system could certainly cause nystagmus.

THE COURT: But I have that.

A. In which case I may be able to describe your situation reasonably well. It could be any of a couple of things. Let's see if I can pull up my crystal ball and then try to do that. Any condition that affects the inner ear, whether it's an inner ear infection or a disease such as Meniere's, or endolymphatic hydrops or benign paroxysmal position

vertigo, anything like that, could potentially cause nystagmus.

In general, though, the nystagmus that will result will occur -- will appear differently than what an officer expects to observe with intoxication, or it will occur under test conditions different than what an officer expects to observe, expects how to conduct the test.

With Meniere's, for example, and hopefully you don't have episodes frequently, and hopefully they don't last very long. But when you do not have an episode, you're not expected to have nystagmus. Physically, physiologically, you should be normal. When you do have an episode, you may not be able to maintain your balance. You may not be able to stand upright. And if someone were to look at your eyes, there's a good chance that you probably would have nystagmus in the resting position when looking straight ahead. That's the most likely scenario while an episode is actually occurring. But if there's no episode, no one would ever know.

THE COURT: So, if you're dizzy, can't really balance, it almost looks like you're drunk.

A. Correct. But if the nystagmus is present in the resting position, that's an immediate -- an

immediate clue to the officer that something else is going on here because he's not expecting to observe that if intoxication were the cause. So, yes, impairment --

THE COURT: You're talking about a pretty well-trained officer.

A. All the officers receive this type of training. They are told -- they're taught what to look for, how it should appear, and they all will go through what are commonly referred to as alcohol workshops or wet labs, testing both sober individuals and individuals who are dosed to certain levels of intoxication to see these effects live. So that is the common training, that is what I commonly know as training in trainings I've participated in, that is commonly done. So, yes, it's not something that the average individual would be aware of, but a properly trained officer should. Now, with regard to -- I'm sorry?

THE COURT: I don't want to interrupt his presentation there.

MALE SPEAKER: No, go ahead.

A. With regard to other types of inner ear problems, either nystagmus will be present when looking straight ahead, or it might be present only

when the head is tipped to the side or back. That type of movement, that type of posture for the suspect is inconsistent with how the officer is trained to conduct the test. So the officer does not ask the suspect to tip his head to the side or to tip it back, and what we demonstrated with our research that we published in 2003 was that if a -- if a subject is laying on his back and the head is in line with the body, not turned to the side in any way, then even if there is a vestibular system problem, it will not cause nystagmus that would be mistaken for intoxication. So those are the main differences there.

Q. So, Doctor, I mean, if I can summarize to address the Judge, essentially, if nystagmus is possible with these other neurological conditions, most likely they'll present in different ways?

A. Absolutely, yes.

Q. Or they'll present under different testing circumstances that the officer's not trained to do?

A. Yes.

Q. You had gotten to, I believe, I think we covered gaze -- max deviation and gaze nystagmus. Did you present everything on those two?

A. Yes, I did.

Q. And also smooth pursuit?

A. Yes.

Q. Is there any other components to the horizontal gaze nystagmus test that the officers are trained to do?

A. Not to the horizontal gaze nystagmus test, no.

Q. Okay.

A. There is another -- another field sobriety test, the vertical gaze nystagmus test which I mentioned earlier, that was originally part of the DRE protocol, and as of -- I believe the date was 2002, it became part of the standardized field sobriety testing. Because it does involve nystagmus, but now nystagmus in up gaze, at maximum up gaze position, it is conducted along with, immediately after the HGN test, but it is not a part of the HGN test, nor does it -- nor is it going to be influenced by the HGN test.

In general, if vertical gaze nystagmus is present in an individual because of intoxication, then the officer will have noticed, will have observed at least four clues, four out of the six possible clues on the HGN test, regardless of the level of intoxication. And the one thing that I can

say for certain because I've seen it in the -- all the different subjects that participated in our various research projects and also alcohol workshops that I've attended, if vertical gaze nystagmus is present, it demonstrates a high level of intoxication for that individual. So for someone -- for a non-drinker or someone who is not used to drinking very much who might be at an .05 or .06, that person could have vertical gaze nystagmus.

In someone who has a little bit more familiarity with consuming alcohol, vertical gaze nystagmus may not be present until he gets to a .10, point 10, or point 12 or even higher than that. Nonetheless, the relevant clues of the HGN test will be present, should be present if the vertical gaze nystagmus was caused by intoxication.

Q. Does a -- okay, how many clues are there for the HGN test?

A. Six.

Q. Six. Do all six clues have to be present for an officer to opine that someone is under the influence?

A. No.

Q. Okay.

A. What the research has shown, and what I've

conducted and collaborated in my research is that the presence of at least four clues is consistent with a blood alcohol concentration of .08 or higher. It does not prove .08 or higher, it absolutely does not prove that, certainly not beyond reasonable doubt or anything, but it is consistent with it. Most -- the majority of individuals who demonstrated at least four clues will have a .08. I have personally seen individuals --

THE COURT: What's majority mean?

A. More than 50 percent.

THE COURT: Okay.

A. Okay. So more than 50 percent of individuals who are at .08 or higher will -- let's just say .08 or higher will demonstrate -- will exhibit at least four clues on the HGN test.

THE COURT: And almost as many won't do that at all?

A. Almost as many -- I have seen individuals under .08 demonstrate all six clues plus vertical, I've seen individuals over .08. I think the highest was a .12, demonstrating fewer than four clues, even zero clues. There are going to be individual differences in physiology. Not everyone and not everyone's body responds exactly the same as the

majority do, but if we're speaking about a general test to be applied, HGN is going to be the most consistent overall across any population, across any age group, across any ethnicity.

THE COURT: More likely than not.

A. More likely than not, yes, sir. And that's the whole point of the test, it's a screening test to allow the officer to form the opinion that yes, the individual's impaired and that intoxication may be the cause. So, in legal terms to develop probable cause for arrest and then to properly and lawfully request the proper pinnacle sample, whether it's breath, blood or urine.

THE COURT: Okay.

Q. So with that said, you liken this to essentially the same thing as another field -- standardized field sobriety test to prove the NHTSA, like a walk and turn, because it has the same purpose?

A. It has -- yes, sir, it has the same purpose.

Q. Okay. Does a person know when he or she has alcohol induced nystagmus?

A. In general, not. They might be able to identify that they're not seeing clearly, they're

not seeing well, they're not able to read a sign or something, but they may not -- I mean, generally not be able to identify that their eyes are actually moving, or moving quickly or continuously.

Q. Okay. Do contact lenses affect results of the HGN?

A. The only way that they would is to maybe reduce the amplitude, the amount of movement of the nystagmus, or even the frequency of the nystagmus. In patients who have either congenital nystagmus or nystagmus for some other condition such as albinism, patients I've seen personally, if they need an optical correction, if they need some either glasses to be able to see clearly in about half of the patients that I've seen personally, if I can get that correction into a contact lens and have them put on a contact lens rather than spectacles it will reduce their nystagmus. It will make them more cosmetically acceptable, even though it might not improve their vision.

Now, some patients have reported to me that they feel that their vision is improved, but on objective testing such as reading the small letters on a visual acuity chart there's really no difference. I don't see the difference. But they

feel better about it, and they look better because the eyes aren't moving as much. Contact lenses have never been known or demonstrated to cause nystagmus in someone who would not have it normally.

Q. So essentially they're more likely to create a false negative as opposed to a false positive?

A. Correct.

Q. Does poor eyesight affect the ability, an individual's ability to do the HGN test?

A. No, it does not. The HGN test is not a vision test per se. The officer -- the stimulus that the officer uses is a fairly large stimulus when it's held at that close distance of 12 to 15 inches. It's either the finger or pen cap or a finger over a pen light. It's not a pinpoint, not a pinpoint or some small letter or anything else.

In general, the officer will ask a suspect who is wearing glasses to remove the glasses so that the officer can see the eyes properly and so that the suspect can see the stimulus properly over the maximum extent of the movement. If the -- as long as the suspect can see the stimulus, can see the rough outline of the finger or the pen cap or the pen light, that is sufficient. It's not necessary

for the suspect to be able to see that clearly.

Q. Okay. Under what settings have you observed police officers use the HGN test?

A. Certainly in training situations such as alcohol workshops and various seminars for officers and prosecutors that I've participated in even here in the state of -- especially here in the state of Kentucky, we often bring in an individual who is -- or several individuals who might be dosed during the seminar and then we test them afterwards. I've also been on ride-alongs and observed drug recognition expert evaluations in jails and station houses and such. So I've seen it in just about every aspect of either training or actual application in law enforcement.

Q. In your training and experience, is HGN -- the HGN test the only indicator of impairment?

A. No, it is not.

Q. So is it safe to say HGN is essentially a tool in the officer's toolbox?

A. Correct.

Q. Do you know if the HGN test is used by anyone other than police officers?

A. Well, certainly in -- when we examine patients, either optometrists or ophthalmologists,

or possibly even neurologists, because I've seen them do something similar, when we assess a patient's eye movements we do something similar. We see -- we check to see if they have smooth pursuit ability, we'll check to see if nystagmus is present, either in primary gaze or when looking off to the side. We don't conduct the eye movement test in exactly the same way following exactly the same protocol as the HGN test, but it is all related, it's very similar.

Q. In your opinion is the presence of nystagmus a reliable and valid indicator of the use of a central nervous system depressant such as alcohol?

A. If the nystagmus or the lack of smooth pursuit is consistent with what an officer would expect to observe when conducting the test, then yes, it is.

Q. And is that opinion based upon the research and publications of others in your field and in other fields?

A. Yes, it is.

Q. Okay. How far back, you know, essentially, does this research go?

A. The earliest that I'm aware of where

various types of nystagmus have been attributed to alcohol use goes back to the 1950s. There is a report from 1940s demonstrating that nystagmus was present in individuals who are using barbiturates as drug therapy. Certainly -- so with alcohol at least to the 1950s and anecdotally I've heard that there have been papers published earlier than that demonstrating that alcohol intoxication causes nystagmus, but I don't know those personally. But at least we can -- at least 1950s, and certainly much research, much work has been done since then.

Q. Are you aware of any scientific peer reviewed publications that state that there is a -- there is no correlation between depressant drug use or alcohol consumption in the presence of nystagmus?

A. No, but even the critics of the HGN test who might not believe that officers should be allowed to conduct this test, or that they cannot form the proper opinion because they don't have the educational background or whatever, even the critics will concede that alcohol and other depressant drugs and other similar drugs will cause nystagmus at high enough levels of intoxication.

THE COURT: You said before that

compounds can cause it, too, right?

A. Well, the inhalants --

THE COURT: (Inaudible).

A. -- like you might have in spray paint, involves halogenic compounds --

THE COURT: Aerosol cans?

A. Aerosol cans, yes. That's a very serious level of --

THE COURT: I mean, do you -- can you limit to what compounds affect that?

A. No.

THE COURT: So there may be compounds we don't know that affect that?

A. Well, there are -- they're going to cause intoxication. They're going to cause impairment. They will do that. They won't have effects only on the eyes. So anything -- any intoxicant that causes the changes in eye movements will also cause changes in behavior and cognitive function. So the individual will be impaired, there's no question, but the question then is what overall will be impaired, what is the cause of the impairment.

THE COURT: I mean, we call it chicken and the egg. Is the impairment there, then you just confirm it, or you think they're doing the

test to show there's impairment?

A. Well, if -- I've heard of police reports, I've spoken with officers who have stopped individuals as they were -- as they were huffing the -- what is the aerosol spray that you use for -- to clean off your keyboard.

THE COURT: Right.

A. Dust Off or whatever it's called. There's a volatile organic compound within that, there is a propellant within that. So what individuals will do is spray that into a paper bag and then inhale from that paper bag and that causes serious impairment. It could cause death. We've had in Oregon, for example, we've had in the past five years we've had several teenagers die or be seriously injured and require hospitalization when doing something like that. So it doesn't just affect the eye movements, it affects everything.

THE COURT: So there's other compounds that may affect your eye movement?

A. Correct. But it still represents intoxication.

THE COURT: But --

A. In those cases there might be no alcohol on board at all.

Q. Doctor, do you have anything else to add or explain to the Court as to why you believe the presence of nystagmus is a reliable and valid indicator?

A. Well --

Q. Of alcohol use or -- I'm sorry, alcohol impairment or intoxication or central nervous system depressant, impairment for intoxication?

A. Yes. One of the professional organizations to which I belong, of which I'm a member is the American Optometric Association. In 1993, the American Optometric Association, which represents all optometrists in the country, adopted a resolution recognizing validity and reliability of the HGN test in how it is applied and how it is used by law enforcement. In 2011, with some minor changes in wording, that resolution is readopted. I was involved in drafting the new resolution, changing them, and also seeing through its passage. Every year the membership of the American Optometric Association get together their representatives from each state meet at what is referred to as the House of Delegates. That's where they debate and decide on resolutions such as this.

In 2011 that resolution passed with a

majority. The American Optometric Association currently has about 20,000 member optometrists and represents the entire profession which constitutes -- and I believe the number is now about 32,000 optometrists, in the United States.

THE COURT: Do you know what -- who sets up the guidelines with the training of police officers in Kentucky on the HGN?

A. That would come from the National Highway Traffic Safety Administration.

THE COURT: Do you know what the criteria for the training is for them?

A. They follow the manual, they follow the standard field sobriety test manual that is used around the entire country.

THE COURT: And you're saying that corresponds with what you said all the indicators are and so forth?

A. Yes, Your Honor.

THE COURT: So that's basically the guideline that everybody should use?

A. Yes.

THE COURT: So there's a set protocol on how these are given and what the results are, or how do you test --

A. Yes. And the training that is to be conducted.

THE COURT: And that's all set out?

A. Yes, sir.

THE COURT: And you correspond with what that says?

A. Yes, I do.

MALE SPEAKER: Your Honor, if I may approach the witness, please.

Q. I'll show you this document, sir.

A. Uh-huh.

Q. We're talking about the 2000 resolution in the American Optometric Association. Is that the resolution you were speaking of?

A. Yes, it is.

Q. Okay. And is that a fair and accurate copy of that resolution?

A. Yes, it is.

Q. Has that resolution been withdrawn by the American Optometric Association since its passage?

A. No.

Q. Can you read that resolution to the Court, please.

A. AOA, so American Optometric Association, HOD, House of Delegates, Resolution 1901, Horizontal

Gaze Nystagmus as a Field Sobriety Test. 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 Traffic Safety Administration have shown the Horizontal Gaze Nystagmus (HGN) test to be a scientifically valid 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 when used in combination with other evidence. And be it further resolved that the American Optometric Association supports doctors of optometry as professional consultants in the use of HGN field sobriety testing.

MALE SPEAKER: Your Honor, I'd move to introduce as Commonwealth C.

MR. SUHRE: No objection.

THE COURT: Be admitted.

Q. Doctor, we had a small conversation before the hearing today and I asked you a question about drugs and the HGN being used to test for impairment

or intoxication of drugs other than alcohol. Is the test administered any differently?

A. No, it is not.

Q. So there's just one HGN test?

A. Correct.

Q. And one BGN test?

A. Correct.

Q. Okay. And the test, unless the officer is also a drug recognition expert, the officer doesn't make a conclusion as to what they're intoxicated by; is that correct?

A. Correct.

Q. The officer doesn't make a conclusion as to what they are intoxicated by; is that correct?

A. Correct.

Q. They merely make a -- I guess a conclusion based upon the clues presented that they are intoxicated or under the influence; is that correct?

A. Correct.

Q. Okay. And is that the same conclusion that the officer is to draw from the other standardized field sobriety tests?

A. Yes.

Q. Okay. So, if he performs a walk and turn, he's not going to say that he was under the

influence of heroin, he's just going to say he was under the influence or intoxicated?

A. Correct.

Q. Okay. And, again, the HGN is used in the same manner?

A. Yes.

Q. All right. Doctor, do you have anything else to add with regard to the science or the reliability of the test?

A. Not at this point, no.

Q. And you stand firm in your position and your opinion that the HGN is a valid and reliable indicator of impairment?

A. Yes, I do.

Q. All right. Now, one last question for you, Doctor, have you been paid to testify here today?

A. Only my travel expenses.

Q. Okay. Have you been given any other personal compensation or promised any personal compensation by my office or the Attorney General's office?

A. I have not.

Q. Okay. So the only thing you were paid for is your airfare, rental car and hotel expense?

A. Yes, sir.
Q. Okay.
MALE SPEAKER: Judge, I believe that's all the questions I have at this time.
THE COURT: Do you get paid by a lot of criminal defense attorneys?
A. Actually have -- no, I would not accept --
THE COURT: Or is the work you do more for prosecution-oriented people?
A. It is, but I have testified for the defense.
THE COURT: You have?
A. Yes, I have. But the same rules apply. I do not -- again, this is not my full-time job. I have a -- I have a job that allows me enough leeway and enough time to do -- to travel across the country when needed on situations like this, and so I do not want to give the impression that, you know, I'm being paid to say anything or provide my testimony. And even when I have testified for the defense, and, yes, I have consulted with defense attorneys and have done that.
MALE SPEAKER: Can I follow up?
THE COURT: Yes, you may.

CROSS-EXAMINATION

Q. You said you testified for the defense, and I'm not offended by that by any means, but I'm sure Mr. Suhre is happy to hear that. Is essentially then your testimony in those situations is fact-specific, correct?

A. Yes.

Q. And as that goes, have you ever opined that the HGN test standing alone by itself when properly administered is not reliable?

A. Well --

Q. Without regard to the facts?

A. Without regard to the -- no, I've never been asked to do that.

Q. Okay. Would you ever do that?

A. Would I ever do -- would I ever say that by itself it is not reliable for determining intoxication? That actually would be my conclusion. That by itself, if you simply dropped someone out of the sky in front of us, conducted the HGN test on the individual with no other indicators, with no other evidence, and you asked me to form an opinion based on that individual's sobriety or level of intoxication, I might form a preliminary opinion but I would not be able to say beyond any shadow of a doubt, or any reasonable doubt or anything that yes,

a person was sober or intoxicated. And the test is not meant to be used that way.

THE COURT: Well, the reality, though, is people try to use it that way because you come upon a wreck scene with a car demolished and a guy standing on the road and the medical people all around him, and the police wants to do an HGN because he wants to see if there's anything there. And you know, he finds that there's nystagmus, then they basically get the cart before the horse. They find the intoxication because of the nystagmus --

A. Right.

THE COURT: -- then anything else flows along like that.

A. Well, except it's still not just dropped out of the sky because now you have a wreck.

THE COURT: Could be caused by bad --

A. It could be caused by -- certainly, certainly, it could be caused by anything. But very often --

THE COURT: You get snow in Oregon, don't you?

A. Oh, we got a lot of snow just this past week. Luckily I was away to miss most of it. I see

you've had some here, too, as well?

THE COURT: Uh-huh.

A. Certainly. It could happen, but invariably in those cases someone else -- another witness or an EMT or someone will direct an officer and say we smelled alcohol on the driver's breath or have noticed -- or that individual might be acting unusually. He might have a head injury --

THE COURT: And absent any of those other circumstances, you wouldn't give reliability to an HGN test? If they just tested out of nowhere, the guy's --

A. Out of nowhere --

THE COURT: (Inaudible).

A. The reliability, as I found from my research, for example, the accuracy of the test is around 70 to 75 percent. So is it a good test in and of itself, absolutely. It is better than any of the other field sobriety tests. It is equivocal to other screening tests either that an officer might do or that a doctor might do. If you go in for a routine physical and have your blood pressure checked and it happens to be high, the doctor will not automatically put you on anti-hypertensive medication. Your blood pressure might be high

because you just ran to get to your appointment, or you're nervous about something coming up later in the day. There could be any number of reasons.

So doing the HGN test or any other field sobriety test out of the context of the traffic stop, which could be a crash, as well, doing it out of that context it reduces the -- it reduces the reliability, it reduces the weight you can give to it as an accurate representation. And under most circumstances, the majority of circumstances that will not happen, that should not happen.

Q. But you also say then essentially it reduces the relevance in regards to testing for intoxication if there's no other clues to give the test in the first place?

A. Correct.

Q. Okay.

MALE SPEAKER: Nothing further, Judge.

THE COURT: Any questions?

FEMALE SPEAKER: No, thank you.

THE WITNESS: Great. Thank you, Your Honor.

THE COURT: So we're going to withhold the cross-examination that I -- I mean, I don't want to screw up your schedule here because I'm

going to pick to remove the hearing?

MALE SPEAKER: I mean, I think it would be contingent upon him identifying his expert and then identifying what time his expert's available. And then also we'd have to coordinate with Dr. Citek when he could be back, as well.

FEMALE SPEAKER: Well, let's put it on for four weeks for a pretrial conference, and at that time -- I'm just thinking out loud here, but my thought is, to do that, and at that time, perhaps, you think in four weeks you can be ready to say you're going to have an expert --

MR. SUHRE: Oh, yes. Yes, ma'am.

FEMALE SPEAKER: Is that reasonable? I mean, we basically treat it almost like a pretrial.

MALE SPEAKER: Sure.

THE COURT: Is the expert still -- I mean do you still have to give him a report or are you just rebutting? How is that evidence working?

MALE SPEAKER: What she said, that was a Rule 7?

THE COURT: We're getting an expert to have a (inaudible)?

MALE SPEAKER: I think if anything we're going to --

MALE SPEAKER: Okay.

MR. SUHRE: But my intention would be to get the report.

THE COURT: I don't know if you're going to -- he's going to make a report or he's just going to rebut the testimony.

MR. SUHRE: I guess I don't know yet. I would anticipate that the primary purpose of it is to -- is two-fold, is to rebut and also as a affirmative testimony on our behalf.

MALE SPEAKER: We would ask for the CV of any proposed expert plus whatever his report or his substantiating documents would be as we have provided to defense counsel.

MR. SUHRE: And I'll be happy to do that.

THE COURT: I guess the ruling's going to be that you need to give a report so much in advance of that hearing, right?

MR. SUHRE: Yes.

THE COURT: How many days you think is appropriate?

MALE SPEAKER: I'm assuming we're only going to set the next date at the pretrial, so as long as we have it in advance of pretrial or at pretrial, then we could set that date and obviously

provide those to Dr. Citek, as well.

MR. SUHRE: I won't be here, so you --

FEMALE SPEAKER: I -- just when you come to schedule it, I'll get you on the phone and we'll do it that way.

MALE SPEAKER: And I'm assuming since we're just going into the reliability of the HGN in terms of testing impairment and intoxication, then we don't need, for purposes of this hearing, to get into the officer's training at this point in time. Unless you want to --

MR. SUHRE: I think that's an evidentiary question? We're just testing the reliability of --

MALE SPEAKER: Reliability they testified.

THE COURT: I would agree.

MALE SPEAKER: Okay.

THE COURT: Okay. Thank you, Doctor.

THE WITNESS: Thank you, Your Honor.

FEMALE SPEAKER: All right. The Court's adjourned.

(END OF RECORDING)

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COMMONWEALTH OF KENTUCKY)

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I, Tina M. Barlow, Notary Public in and for the Commonwealth of Kentucky at Large, certify that the audio recording was transcribed by me, and the foregoing is a true record of said audio recording, transcribed to the best of my ability.

IN WITNESS WHEREOF, I have subscribed my name and affixed my seal this 28th day of February, 2014.

_____

Tina M. Barlow

Notary Public

My Commission expires: 11/6/14

Notary ID 429588