This is the deposition of optometrist Dr. Jack Richman in the civil case Sukoc vs Carlson, filed in Vermont. Carlson arrested Sukoc for DUID. Toxicology testing revealed no drugs. Sukoc sued. Dr. Richman was the police / defense expert in the civil case. Dr. Richman submitted an opinion letter and a CV.

Dr. Richman was for many years the "medical expert" of the International Association of Chiefs of Police's Drug Evaluation and Classification Program's Technical Advisory Panel. The DECP TAP is said to keep police Drug Recognition Expert training up to date in accordance with the world's scientific literature.

Note pdf pages 98-9, depo 71-2

Q. Is there a scientific document identifying and enumerating the standards of the Standardized Field Sobriety Test?

A. There's no standard documents that defines the standards in which these decisions are made.

Note pdf pages 131-2, depo 104-5

Q. Those are the three validation studies that we talked about Florida, Colorado, and San Diego?

A. Yes, sir.

Q. Can you show me where HGN scores predicted driving scores?

A. No.

Q. Walk and Turn scores predicted driving scores or where One Leg Stand predicted scores predicted driving scores?

A. There's no test of driving....

Note pdf pages 130 ff, depo 106 ff

Q. What scientific mathematical formula do scientists use to calculate the probability that when a person has horizontal gaze nystagmus, the person is impaired by a drug?

A. They will use a — I'll tell you exactly. They did a KHI square [chi squared] to determine the sensitivity and specificity. This is a probability. And it's a decision matrix that is a standard method to determine how well something -- one's test will predict the outcome of another. And that's a standard protocol that was used specifically in the San Diego study.

Dr. Richman's answer is wrong. Scientifically, mathematically wrong. The IACP TAP's long time "medical expert" does not understand how the SFST and Drug Influence Evaluation tests change the probability of the condition tested for. (For an explanation of this science, see: Kane, G. *The Methodological Quality of Three Foundational Law Enforcement Drug Influence Evaluation Validation Studies*. Journal of Negative Results in Biomedicine. 2013 Nov 4;12(1):16. § Accuracy of diagnostic tests, pg 2. For more, read the peer-reviewed scientific articles footnoted there. http://www.jnrbm.com/content/pdf/1477-5751-12-16.pdf)

EXPERT OPINION REPORT

By Jack E. Richman

Qualifications

I am a Professor Emeritus at the New England College of Optometry and have lectured widely, both in this country and internationally. My primary clinical research interests are in children's vision, vision dysfunction and reading, the effect of nervous system impairment on eye movements, and visual attention dysfunction. I have published approximately sixty articles and book chapters on these subjects.

I am a Fellow of the American Academy of Optometry, a Diplomate in the Section on Pediatric Optometry, Binocular Vision and Perception, a Fellow of the College of Optometrists in Vision Development and am Board Certified in Vision Therapy. I am a member of the American Optometric Association and the Neuro-Optometric Rehabilitation Association. I am a frequent lecturer on pharmacology of the central nervous system and drugs of abuse and their effect on the eyes.

For the past 45 years I have served in numerous clinical and academic positions in Optometry. These include serving as Associate and Full Professor at three colleges of Optometry, Chief of Pediatric Optometry of the Pediatric Optometry and Binocular Vision service at Pennsylvania College of Optometry, The Michigan College of Optometry, and the New England College of Optometry and Eye Institute in Boston, MA. Presently, I am retired from full time practice and teaching at the College. I am active part time in a private group practice in Cape Cod, Massachusetts, specializing in assessment and treatment of visual problems related to brain injuries and learning related

vision problems. Based on my training and experience in binocular vision disorders and eye movements, I became involved in research and teaching in the area of eye movements used in Standardized Field Sobriety Testing (SFST), the Horizontal Gaze Nystagmus (HGN) test, and the use of pupil measurements for detecting drug and fatigue impairment. I completed training in Standardized Field Sobriety testing, and was certified as an instructor. I continued my law enforcement training and was certified as a Drug Recognition Expert and a Drug Recognition Expert instructor. I served as the medical consultant to the International Association of Chiefs of Police Committee's Technical Advisory Panel for over fifteen years. My expertise is often called upon throughout the United States to serve as an expert witness in many criminal cases involving impaired driving due to drugs and alcohol, Standardized Field sobriety testing, and Drug Recognition Expert assessment protocols. I presently serve as police physician for the Hingham Police Department in Massachusetts.

A copy of my curriculum vitae has been previously provided. I have been retained by the Vermont Attorney General's Office to review the case of Fata Sakoc vs. Timothy Carlson. I now render my expert opinions, to a reasonable degree of professional certainty on the procedures and methods utilized. These opinions are based upon review of the materials made available to me. I reserve the right to change or modify this opinion should additional facts or documents or evidence become available to me.

Evidence Reviewed and References Relied Upon

- Opinion and order granting in part and denying in part defendant's motion for summary judgment case 5:11-cv-00290-cr/ document 22/ filed 09/10/12
- Police Incident Reports

- Officer Stephen Dunning; Essex PD,
- Trooper Carlson; Vermont State Police
- Officer Plunkett; S Burlington PD; Drug Recognition Evaluation Narrative Report

- Expert Report –Dr. Christopher Chapman Jan 25, 2013

- Depositions, with exhibits, of:
  - Christopher Chapman, May 24, 2013
  - Officer Stephen P. Dunning May 10, 2013
  - Trooper Matthew J. Plunkett, DRE May 10, 2013
- Video-Recorded Traffic Stop
  - Transcript of Video-Recorded Traffic Stop March 5, 2010
  - Video-Recorded Traffic Stop March 5, 2010

Recent Court Cases Testified as an Expert in DUI

- Butler PA Butler PA March 7, 2008 Commonwealth of Pennsylvania v. Samuel Tiche ; CP-10-CR0000718-2007
- State of Maryland vs. Richard Crampton; Montgomery County MD February 11 2013 Rockville MD Courthouse: Case 121222-C; Feb 2013
- State of Maryland vs Wood, Tayman, Fostor, Foote, Hoyle, Enrico, Quaglieri, Kinnison; Calvert County MD District Court, November 2012
- Commonwealth of Massachusetts vs. ANTHONY DEICICCHI case # 2011-0H6-003687 Norfolk Superior Court, Dedham MA. Sept 6 -9 2013
- Commonwealth of Massachusetts vs. Joseph Keiser case Norfolk Superior Court, Dedham MA. June 3, 2011

Facts and Background

- On March 5, 2010, Mrs. Fata Sakoc was driving home after working at a residential care facility in Burlington, Vermont.
- Trooper Carlson observed Mrs. Sakoc's vehicle traveling on Route 15 after 11 PM in in Essex, Vermont with a headlight out. In his attempt to pull her over, he reportedly observed her make a quick

turn from the left lane between two cars in the right lane that he considered unsafe. Trooper Carlson reportedly observed Mrs. Sakoc and considered her to be operating her vehicle in a dangerous manner. He then pulled Mrs. Sakoc's vehicle over to the side of the road in an area clear of vehicles.

- Trooper Carlson observed her responses to be delayed, and he had to repeat several questions to obtain answers. Mrs. Sakoc was unable to produce a valid license or registration however Trooper Carlson did subsequently confirm that Mrs. Sakoc had both a valid license and current registration. Trooper Carlson asked Mrs. Sakoc to exit her vehicle and asked her twice to close the car door, and then he shut it for her. Trooper Carlson performed three field sobriety exercises on Mrs. Sakoc including horizontal gaze nystagmus, walk-and-turn, and one leg stand while Officer Dunning of the Essex Police Department observed. The video did confirm that she was facing oncoming traffic and the activated emergency roof lights from his cruiser.
- During the horizontal gaze nystagmus test, Trooper Carlson observed that Mrs. Sakoc exhibited lack of smooth pursuit and distinct nystagmus at maximum deviation in each eye, for a score of four clues. During the walk-and-tum, Mrs. Sakoc reportedly lost her balance while turning, twice started before being instructed to do so, failed to touch her heels to her toes, and took only eight of the nine requested steps, for a score of four clues.
- The video reveals that Mrs. Sakoc swayed slightly during her tum. The video also reveals that Mrs. Sakoc started the exercise multiple

times before it began; however, the audio is not available to determine whether this was contrary to instructions. It is also not clear from the video whether Mrs. Sakoc touched her heels to her toes. The video appears to depict Mrs. Sakoc taking the requisite nine steps in one direction but not the other.

- Trooper Carlson demonstrated the one-leg stand and instructed Mrs. Sakoc to count up to thirty. In response, she counted in sequence from one to sixteen before Trooper Carlson told her she could put her foot down. The video illustrates that Mrs. Sakoc leaned back and forth while attempting to balance and raised her arms to keep her balance. This was scored as two clues for a total of two clues. Trooper Carlson concluded that Mrs. Sakoc was "moderately impaired." Officer Dunning and Trooper Carlson explained to Mrs. Sakoc that he wanted to administer a preliminary breath test for alcohol. This revealed no alcohol in her system.
- Trooper Carlson directed Mrs. Sakoc to get back into her car and discussed the results with Officer Dunning. At this point, Trooper Carlson decided that Mrs. Sakoc was impaired possibly by drugs and requested that a drug recognition expert (DRE) be dispatched to the scene.
- Officer Plunkett of the South Burlington Police Department, a certified DRE, arrived within approximately 10 minute on the scene. Trooper Carlson described Mrs. Sakoc's performance and his observations as to the reason for his stopping Mrs. Sakoc to Officer Plunkett. This is routine part of the complete DRE evaluation. This included his observations of her operation of the vehicle, then his

observations in the initial personal contact after the stop, and the results of his field sobriety exercises. Based on these observations, Trooper Carlson determined that she was driving under the influence and advised her that he was placing her under arrest for DUI. She was transported to the Williston Barracks where Officer Plunkett would then administer a DRE evaluation in a controlled environment.

- Officer Plunkett completed his evaluation and independently reported comparable signs of impairment in the horizontal gaze nystagmus, walk-and-turn, and one-leg stand tests. Based on all the findings of Trooper Carlson and Officer Plunkett, it was concluded that Mrs. Sakoc was impaired and most likely under the influence of a central nervous system depressant drug. Trooper Carlson transported Mrs. Sakoc to a hospital to obtain a sample of her blood.

Opinions and Comments

What is reportedly in dispute in this case is whether or not Trooper Carlson had probable cause to arrest Mrs. Sakoc, based on all the facts and circumstances and applying his knowledge and training, and if this information was reasonably reliable and acceptable to justify Trooper Carlson's decision that an offense had been committed and the suspect should be arrested.

Based on a systematic review of the evidence provided and reviewed in conjunction with the references listed (**Appendix I**), I will offer my opinion, based on my experience, training, and knowledge to a reasonable degree of professional certainty, on the practices and procedures utilized by Vermont State Police Trooper Timothy Carlson.

#1. It is my opinion to a reasonable degree of professional certainty that the Standardized Field Sobriety Test (SFST) procedures applied by Trooper Carlson were, for the most part, entirely consistent with the national standards approved by the International Chiefs of Police (IACP) and the National Highway Traffic Safety Administration (NHTSA).

A.) In my opinion, the practices and procedures applied by Trooper Carlson were in compliance with generally accepted police practices and procedures for professional police departments to determine if a person is potentially impaired due to alcohol or drugs and should not be operating a motor vehicle.

He performed all three phases of the DUI process, identifying and gathering evidence to determine whether or not a suspect should he arrested for a DUI violation. These phases of the detection process are: Phase One - Vehicle In Motion, followed by Phase Two - Personal Contact, and finally, Phase Three - Pre-arrest Screening including the Horizontal Gaze Nystagmus test, walk-and-turn test, and the one-leg stand test.

#2 It is my opinion to a reasonable degree of professional certainty that Trooper Carlson's information gathered, relative to the three phase process for DUI detection, was generally reliable and valid and supported his probable cause to arrest Mrs. Sakoc for impaired operation of a motor vehicle.

A.) There were several, though slight, departures by Trooper Carlson from the standardized administration of the Pre-arrest Screening protocol of the SFSTs. The most important of these were related to his administration of the HGN test: (1) the emergency strobe lights (wig-wag) on his police cruiser were not turned off facing forward and were in the suspect's line of sight, and (2) the suspect was facing oncoming traffic at night.

B.) According to Christopher Chapman (Deposition Transcript –pp.156-159), the HGN test administered by Trooper Carlson was invalid because, as he explained it, the "Only thing I can say to a reasonable degree of scientific certainty if a person is facing oncoming traffic and wig-wags, more likely than not that will produce a nystagmus and specifically horizontal nystagmus."

I believe Christopher Chapman is referring to Optokinetic Nystagmus. Optokinetic Nystagmus is an *induced or provoked* event that occurs when an individual is specifically asked to follow a series of moving object with their eyes as these objects are moving across their visual field. Optokinetic Nystagmus is seen as a combination of a refixation and smooth pursuit eye movements when an individual is specifically asked to follow a moving object with their eyes, then moves out of the field of vision at which point their eye moves back to the position it was in when it first saw the object. This is seen principally in the straight-ahead or primary gaze position.

The viewing condition of the emergency strobe lights (wig-wag) on Trooper Carlson's police cruiser facing forward in the suspects line of sight may possibly create a brief visual attention distraction that possibly could affect only one phase of the HGN test, i.e., lack of smooth pursuit. Nevertheless, this is only one part of the three part HGN test. Such a distraction, based on my training and experience, will not affect the other two parts of the HGN test. For the lights to create an Optokinetic Nystagmus, which interfered with the smooth pursuit part of the HGN test, Mrs. Sakoc would have had to have been specifically directed and told to watch the lights. This did not occur based on the evidence. Furthermore, on a scientific basis, the wig wag lights do not create the type of consistent unidirectional moving visual field required to induce an Optokinetic Nystagmus. In addition, her attention and visual fixation was assessed (for

Resting Nystagmus) initially when she was asked to look at the target when these distracting lights were on. If the lights were creating such an effect to induce Optokinetic Nystagmus, this would have been observed in primary gaze (at rest) before the test was started. There was no primary gaze or resting nystagmus or difficulty holding her eyes steady straight-ahead noted or reported. In my opinion, based on my training, knowledge, and experience, the police cruiser wig-wag lights could not induce what is typically seen as an Optokinetic Nystagmus and would not been a cause for the observed HGN clues.

C.) Regarding Trooper Carlson's supposed inexperience in administering and interpreting the HGN test, I conducted a study in 1994 assessing the competency and accuracy of police academy recruits in the use of the horizontal gaze nystagmus test for detecting alcohol impairment. (The competency and accuracy of police academy recruits in the use of the horizontal gaze nystagmus test for detecting alcohol impairment Authors: Jack E. Richman, O.D., and John Jakobowski, M.S. New England Journal of Optometry 1994 Winter Vol. 47, No. I). The purpose of this study was to determine the accuracy in the use and interpretation of the HGN test by new police officers following a precise training program in determining probable cause for arresting an impaired driver. This study demonstrates and supports earlier studies as to the effectiveness of the eye movement procedure in differentially identifying impaired and/or intoxicated individuals from those who are not impaired. It further supports the effectiveness of the training program for new police officers and the recruits in their ability to apply the procedure with excellent results.

D.) Officer Plunkett completed his in- depth DRE evaluation at the Williston Barracks on Mrs. Sakoc.

a. As background, Officer Plunkett is a certified Drug Recognition Expert. The Drug Evaluation and Classification (DEC) Program is a transportation safety program focusing on the detection and apprehension of drug-impaired drivers. The program is managed nationwide and coordinated by the International Association of Chiefs of Police (IACP) with support from the National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation. This DRE Program trains police officers and other public safety officials as drug recognition experts or drug recognition evaluators (DREs) through an intense 110 hour three-phase training curriculum. There are comprehensive written and practical in the field tests that a DRE must pass to be certified. Once certified, he or she must maintain documentation of evaluations and continuing education on a biannual basis to remain certified. DREs conduct a detailed 12 step process and examination of persons arrested or suspected of drug-impaired driving or similar offenses. Based on the results of the DRE drug evaluation they form an expert opinion as to whether or not the person is impaired, and if so, is the person able to operate a vehicle safely. If the DRE concludes that the person is impaired, the next question becomes: is the impairment due to an injury, illness or other medical complication, or is it drug-related? If the DRE concludes that the impairment is due to drugs, he or she determines which category or combination of categories of drugs is the most likely source of the impairment.

b. Officer Plunkett essentially obtained the same results as Trooper Carlson in the HGN, Walk-and-Turn, and One-Leg-Stand test in addition to the numerous other indicators of divided attention, lack of

coordination, and impaired central nervous system function at the time of the arrest. He concluded that, based on his 12 step process and evaluation, Mrs. Sakoc was impaired, possibly under the influence of Central Nervous System depressants and unable to safely operate a motor vehicle.

c. In my opinion, Officer Plunkett's DRE evaluation is a standard scientific method to establish test–retest replication of Trooper Carlson's SFST findings and is a hallmark of good science and methodology. This is essential in providing accurate information in any decision making process. Test-retest reliability is a measure of the consistency and reliability of a test or assessment outcome. Test-retest reliability is measured by administering a test twice at two different points in time. This type of reliability assumes that there will be an insignificant or no change in the function being measured. In most cases, reliability will be higher when little time has passed between tests.

#3 It is my opinion to a reasonable degree of professional certainty that Horizontal Gaze Nystagmus can be used effectively to detect central nervous system impairment due to alcohol as well as drugs.

A.) There is an issue raised by Christopher Chapman (Deposition Transcript – pp.67-80), where he opines that HGN can essentially only detect alcohol and not other drugs. This opinion is not supported by the scientific literature.

B.) In my opinion, based on the references in **Appendix I**, eye movements have consistently been reported to be impaired by alcohol, central nervous depressants, inhalants, and dissociative anesthetics and will exhibit the characteristic signs of loss of smooth pursuit, nystagmus at maximum deviation, and onset of nystagmus prior to 45 degrees.

C.) Numerous authoritative textbooks and references that address the presence of impaired pursuit and nystagmus in persons under the influence of central nervous system depressant drugs other than alcohol include:

a. Carisoprodol, meprobamate, and driving impairment. J Forensic Sci. 2000 May; 45(3): 619-23. Logan BK, Case GA, Gordon AM

b. Drugs and Human Performance Fact Sheets: Final Report; August 2000-March 2004. A panel of international experts on drug-impaired driving met in Seattle during August 2000 to review developments in the field of drugs and human performance over the last 10 years; These Fact Sheets represent the conclusions of the Panel and include the state of current scientific knowledge in the area of drugs and human performance for the 16 drugs selected for evaluation. They note that CNS Depressants drugs above therapeutic doses, such as carisoprodol, diazepam and Gamma-Hydroxybutyrate (GHB), and Phencyclidine (PCP) will all produce physiological signs of nystagmus.

c. Drug-Induced Ocular Side Effects Edition: 5th

Frederick T. Fraunfelder ; Frederick W. Fraunfelder

Publisher: Butterworth-Heinemann; 5th edition (December 5, 2000)

d. Drug Effects on Psychomotor Performance

Randall Baselt (Author)

Publisher: CHEMICAL TOXICOLOGY; 1 edition (November 2000)

e. The Neurology of Eye Movements

John Leigh and David S. Zee

Publisher: Oxford University Press, USA; 3rd edition

Page 102 states, "*In the clinic, the commonest cause of gaze-evoked nystagmus [nystagmus at maximum deviation] is medication- usually sedatives, tranquilizers [benzodiazepines], and anticonconvulsants.*"

#5 It is my opinion to a reasonable degree of professional certainty that the Horizontal Gaze Nystagmus test is the most valid and reliable test of the SFST battery. When used in conjunction with the other tests in the SFST battery, these were highly predictive of detecting impaired drivers at levels above 90% accuracy.

A.) Based on the scientific studies of the relationship between the level of alcohol, another central nervous system depressant, and HGN, they were found to be highly correlated in numerous peer reviewed studies

- Nystagmus testing in intoxicated individuals. Optometry. 2003 Nov; 74(11): 695-710. Citek K, Ball B, Rutledge DA.
- Sobriety tests for low blood alcohol concentrations. Accid Anal Prev. 2002 May; 34(3): 305-11. McKnight AJ, Langston EA, McKnight AS, Lange JE.
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- Gaze nystagmus and blood alcohol. Source Authors Goding GS. Dobie RA.Laryngoscope. 96(7):713-7, 1986 Jul.
- The competency and accuracy of police academy recruits in the use of the horizontal gaze nystagmus test for detecting alcohol impairment Authors: Jack E. Richman, O.D., and John Jakobowski, M.S. New England Journal of Optometry 1994 Winter Vol. 47, No. I

B.) In terms of the HGN being a valid and reliable predictor of impairment and blood alcohol, there were again various consistent and repeatable studies all supporting the correlation of alcohol and HGN. These studies determined that the HGN and the other two SFST test, (Walk-and-turn, One Leg Stand) reliably enabled officers:

- To detect central nervous system impairment due to alcohol as well as drugs;
- To make accurate arrest decisions when the SFSTs are used by trained and experienced officers; and
- To be accurate in discriminating between BACs above and below 0.08 percent

References to the studies relied on for my opinion in this regard is as follows:

- A Colorado Validation Study of the Standardized Field Sobriety Test (SFST) Battery: Final Report Submitted to Colorado Department of Transportation November 1995. This report was funded by the Office of Transportation Safety, Colorado Department of Transportation (utilizing National Highway Traffic Safety Administration funds under Project Number 95-408-17-05)
- A Florida Validation Study of the Standardized Field Sobriety Test (S.F.S.T.) Battery This research project was prepared for the State Safety Office, Department of Transportation, State of Florida in cooperation with the National Highway Traffic Safety Administration, U.S. Department of Transportation and/or Federal Highway (under project number AL-97-05-14-01).
- San Diego Validation Of The Standardized Field Sobriety Test August 1998Validation Of The Standardized Field Sobriety Test; Battery At

BACs Below 0.10 Percent: Final Report Submitted To: U.S. Department Of Transportation National Highway Traffic Safety Administration Grant No. Santa Barbara, CA 93102 DTNH22-95-C-05192.

#6 It is my opinion to a reasonable degree of professional certainty that Nicotine or Caffeine will not cause Horizontal Gaze Nystagmus as displayed in the Standardized Field Sobriety test battery used by law enforcement.

A.) According to Christopher Chapman (Deposition Transcript –pp.165-169), "Excessive exposure to nicotine and caffeine may cause nystagmus." He claims there are references supporting this statement. Mr. Chapman sites these references in Appendix C in his report of January 25, 2013. In an attempt to confirm this, his references were reviewed, however, there was no scientific information or studies to support his claim.

B.) To be thorough, I searched and reviewed the published scientific literature that I could obtain regarding this subject of caffeine or nicotine inducing nystagmus.

a. Caffeine: I could not find any systematic published study indicating caffeine as a cause of nystagmus.

b. Nicotine: There was evidence in systematic published studies indicating nicotine as a cause of nystagmus. (Appendix I Nicotone and Nystagmus)

1: Deutschländer A, Stephan T, Riedel E, Zingler VC, Hüfner K, Wiesmann M, Pierrot-Deseilligny C, Strupp M, Brandt T. Nicotine-induced nystagmus correlates with midpontine activation. Neuroimage. 2008 Jun;41(2):479-82. doi:10.1016/j.neuroimage.2008.03.001.

2: Zingler VC, Denecke K, Jahn K, von Meyer L, Krafczyk S, Krams M, Elfont R, Brandt T, Strupp M, Glasauer S. The effect of nicotine on perceptual, ocular motor, postural, and vegetative functions at rest and in motion. J Neurol. 2007Dec; 254(12):1689-97.

3: Kim JI, Somers JT, Stahl JS, Bhidayasiri R, Leigh RJ. Vertical nystagmus in normal subjects: effects of head position, nicotine and scopolamine. J. Vestib. Res. 2000; 10(6):291-300.

4: Pereira CB, Strupp M, Holzleitner T, Brandt T. Smoking and balance: correlation of nicotine-induced nystagmus and postural body sway. Neuroreport. 2001 May 8;12(6):1223-6.

5: Pereira CB, Strupp M, Eggert T, Straube A, Brandt T. Nicotine-induced nystagmus: three-dimensional analysis and dependence on head position. Neurology. 2000 Nov 28; 55(10):1563-6.

6: Domino EF, Ni LS, Zhang H. Effects of tobacco smoking on human ocular smooth pursuit. Clin Pharmacol Ther. 1997 Mar;61(3):349-59. Erratum in: Clin Pharmacol Ther 1997 Jun; 61(6):627.

7: Sibony PA, Evinger C, Manning K, Pellegrini JJ. Nicotine and tobacco-induced nystagmus. Ann Neurol. 1990 Aug; 28(2):198.

8: Sibony PA, Evinger C, Manning KA. Tobacco-induced primary-position upbeat nystagmus. Ann Neurol. 1987 Jan; 21(1):53-8.

C.) Upon analysis of these studies of the relationship of nicotine and nystagmus, I offer the following opinion:

Nicotine can induce a nystagmus. Nonetheless, the type of nystagmus due to nicotine would appear and be observed under the following conditions and measurement methodology to occur.

a. Primary (Straight ahead) and /or in the vertical position as opposed to the horizontal.
b. It is induced by postural and head position changes.
c. It is generally measured in total or near total darkness with the instrumentation.
d. It is measured by electronic methods including high resolution videography and electro-nystagmography. The size of the nystagmus recorded by these methods was quite small (less than 1 degree is several reports) and would not be visible to the naked eye in darkness.
e. Nicotine most often will cause a vertical and/or rotary nystagmus related to the vestibular system, not a horizontal gaze-evoked type characteristic of HGN.

Therefore, based on my review of these methods described in the studies and the type of appearance that nicotine induced nystagmus would create, it is my opinion that the nystagmus reported as part of the SFST at roadside and later in the DRE evaluation would not be related nor caused by nicotine. The HGN

observed and reported by Trooper Carlson and later confirmed by Officer Plunkett would most likely be caused by another undetermined cause.

#7 It is my opinion to a reasonable degree of professional certainty that, more likely than not, Mrs. Sakoc was impaired by a very short acting compound which was exhibited in the SFST evaluations performed and reported by Trooper Carlson and later confirmed by Officer Plunkett.

Specifically, the impairment signs that were observed and reported in the Horizontal Gaze Nystagmus test results are consistent with those that may well be caused by very short acting central nervous depressants and/or inhalants. In addition, it is my opinion to a reasonable degree of professional certainty, that there is a reasonably good probability that Mrs. Sakoc was impaired by one or more of these compounds which have exceptionally short half-lives. Though these signs of impairment were reportedly observed, there was a significant delay in obtaining the blood sample required for the toxicology analysis. Due to this delay and the likelihood of the presence of a very fast acting central nervous depressants and/or inhalant, the toxicological analysis simply did not meet the threshold for reporting the presence of such compounds on the NMS Lab Report to account for the observed signs of impairment.

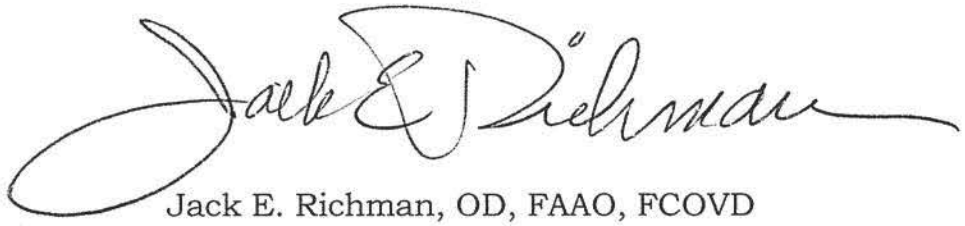
Concluding Opinion

It is my opinion, based on the facts and information available, that Trooper Carlson applied his training, knowledge, and used appropriate procedures when he encountered what appeared to him to be an impaired driver. The procedures he used were all supported by years of field study and scientific research. Trooper Carlson applied all three phases in making his decision to arrest Mrs. Sakoc (operation of the vehicle, personal contact, and psychophysical standardized field sobriety tests). He asked for support, as needed, and appeared

to have deliberated through the information before making his decision to arrest Mrs. Sakoc for impaired operation. I believe that Trooper Carlson had probable cause based on all of the facts and circumstances, the information Trooper Carlson gathered was reasonably reliable and acceptable to warrant his conclusion that he had probable cause that Mrs. Sakoc had committed the offense of driving while impaired. It is my opinion to a reasonable degree of professional certainty that Trooper Carlson, while not perfect in his DUI investigation, had sufficient information, even setting aside the disputed issue of Mrs. Sakoc's unsafe operation, to justify his decision that he had probable cause to believe an offense had been committed and the suspect should be arrested.

All of the opinions I have offered in this report are to a reasonable degree of professional certainty. Those opinions are based on the information listed in the Materials and Documents and References Reviewed section of this report. In forming these opinions I have also relied on the knowledge and experience that 1 have acquired over 45 years as an optometric physician, professor, researcher, and 26 years as a police physician, SFST and DRE instructor. I have utilized my education, knowledge, and experience to guide me in the formation of these opinions.

Dated: December 6, 2013



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Appendix I

REFERENCES:

BOOKS

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2. Drug Effects on Psychomotor Performance
Randall Baselt (Author)
Publisher: CHEMICAL TOXICOLOGY; 1 edition (November 2000)
Language: English
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3. The Neurology of Eye Movements
John Leigh and David S. Zee
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3. Sobriety tests for low blood alcohol concentrations. Accid. Anal Prev. 2002 May; 34(3): 305-11. McKnight AJ, Langston EA, McKnight AS, Lange JE.

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UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF VERMONT

CA NO. 5:11-CV-290

FATA SUKOC,

PLAINTIFF

VS.

TIMOTHY CARLSON,

DEFENDANT

DEPOSITION OF JACK E. RICHMAN, OD, FAAO, FCOVD

December 18, 2013 - 11:00 a.m.

Holiday Inn - 929 Hingham Street

Rockland, Masachusetts

---- Jill Kourafas, CSR No. 149308 ----

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(Original exhibits were retained by the Court Reporter and returned to Mr. Williams along with the original deposition transcript. PDFs of exhibits were linked to electronic transcripts.)

P R O C E E D I N G S

(Following exhibits were marked predeposition.)

(Curriculum Vitae of Dr. Richman marked Exhibit No. 1.)

(Expert Opinion Report marked Exhibit No. 2.)

(Vermont DPS Cruiser Videotape by Timothy Carlson, Case No. 10A101009 marked Exhibit No. 3.)

(Black Binder entitled "DUI Detection and Standardized Field Sobriety Testing" bate-stamped AG0803 - AG092 marked Exhibit No. 4.)

(Black Binder entitled "Drug Evaluation and Classification Program 2005 marked Exhibit No. 5.)

(Definition of Optometry in the Commonwealth of Massachusetts marked Exhibit No. 6.)

- - - -

JACK E. RICHMAN, having been called for examination by counsel, having been satisfactorily identified by the production of a driver's license and being first duly sworn by the Notary Public, testified under oath as follows in answer to

DIRECT EXAMINATION BY MR. WILLIAMS:

Q. Thank you, Doctor, for coming in today. How are you?

A. Fine, sir.

Q. Vermont, like most states, prohibits people from operating a motor vehicle while under the influence of intoxicating liquor.

Can you define for me the legal definition of "under the influence of intoxicating liquor" under Vermont law?

A. No.

Q. Okay. And is that standard any different than being under the influence of any other drug

under Vermont law?

A. I do not know Vermont law regarding those particular statutes.

Q. So you don't know what -- you have no idea what Vermont prohibits with regard to driving and having drugs in your system?

A. Other than as far as alcohol, I know it complies with a no-age standard for alcohol. With drugs, I believe it's any drugs that are impairing.

Q. Now, I was going to ask you: You used "impairment" throughout your expert report?

A. That's correct.

Q. Let me hand you Exhibit 4, which is a DUI Detection and Standardized Field Sobriety Testing Student Manual approved in 2006. There's a definitional section?

A. I believe there's a glossary, that's correct.

Q. There's a glossary of terms. Is your definition of "impairment" found in that document?

A. (Witness reviews document.)

I don't believe it's in here. I know

there's a definition in the Drug Recognition Evaluation Program, definition of impairment and definition of a drug. That's a much bigger one. But I know there's a clear definition for it here.

Q. Your definition for "impairment" does not come out of the student manual?

A. Out of this particular manual, no.

Q. Let me show you what was marked as Deposition Exhibit No. 5. It's the 2010 Drug Recognition Expert Student Manual?

A. Yes.

Q. Let me just show you the glossary section. You indicated your definition of impairment is found in there?

A. That's one of my definitions.

Q. If you could, point out a definition in that document, I would appreciate it.

A. Sure. It's under "Drug: Any substance that when taken into the body can impair the ability of a person operating a motor vehicle safely."

That's a limited, but focused definition of impairment.

Q. What do you mean by "impairment"? Is that a scientific definition?

A. It's a scientific definition, but it's not linked to specific state laws.

Q. Is that the scientific definition of impairment?

A. Impairment is anything that creates a loss or breakdown in the ability for an individual to function properly. So impairment is a loss or inability to function physiologically, biologically, psychologically behaviorally, that deviates from the normal behavior of an individual.

Q. And where would I find that scientific definition?

A. World Health Organization has one that follows that and they have a very consistent definition, to my knowledge, of what is a -- what is impairment.

Q. But what is the document?

A. They have their own documents.

Q. I understand they have their own documents. I want to be able to find that document.

A. Well, off the top of my head, probably go to Word Health Organization and look under what they consider impairment. I didn't bring that with me, but that's one that I have used numerous times.

Q. It's not mentioned in your -- you don't define "impairment" in your report?

A. I did not, that's correct.

Q. You say the World Health Organization has a standardized definition of impairment?

A. It has a definition of impairment: Loss or inability of a bodily, a physical or functions, or psychological functions.

Q. You're talking about impairment by drug, correct, not impairment, by some physical --

A. It could be anything.

Q. So impairment could be if I --

A. It could be a medical problem.

Q. If I have a medical problem, cerebral palsy, that would fit your definition of impairment?

A. That's correct. There's an impairment. If you had a stroke. If you had some -- anything that will deviate and impair your normal

psychological functions. And that's consistent with what we deal with with alcohol and drugs.

Q. And that's the definition that you're using it's a medical definition?

A. It's a medical definition because impairment legally is different because that will vary from state to state if an individual is impaired.

Q. Is it a neurological definition?

A. It's a biological definition.

Q. Is it a pharmacological definition?

A. It can be if a drug induced it.

Q. And where would I find the pharmacological definition of impairment? Where would I find that if I went looking in the scientific literature?

A. Probably where you'd find it is under the side effects of overdoses or side effects of particular drugs.

Anytime you look up any particular drug and you look at its side effects or "it's adverse reactions," you're basically getting a definition of impairment of an individual.

Q. Now, you say "side effects of drugs"; if

a drug causes me stomach distress, I'm impaired under your definition?

A. Not -- if it affects your ability to function effectively, that drug has caused an impairment, but more specifically if a drug created dizziness, disorientation, loss of motor control, loss of ability to think appropriately, affect attention functions. Many drugs will do these and many of the side effects of drugs.

These are adverse effects. We often see these kinds of effects everyday on TV, or ads where the ad for a particular drug is shown, and they'll describe all the adverse effects. Those are impairing signs.

Q. But you don't give a definition of impairment in your report, and you don't know what Vermont law prohibits a person from driving while taking drugs?

MR. PATANE: Objection.

Q. Correct?

MR. PATANE: You can answer.

Q. You don't give a definition, correct?

A. No. I didn't see a need to provide a definition.

Q. And you are unaware about Vermont law in driving while taking drugs?

A. Correct, because that's a legal definition.

Q. That's right, it is a legal definition, that's correct.

Now, you're a licensed optometrist, correct?

A. Yes.

Q. And a licensed optometrist may do certain things in the Commonwealth, correct?

A. In the Commonwealth of Massachusetts?

Q. Yes. We are here in the Commonwealth.

A. Yes.

Q. Here is a definition, Exhibit 6. This is Chapter 112, Section 66 of the laws of the Commonwealth regarding the practice of optometry.

Does that look like that to you?

A. Yes. That's the general definition.

Q. Is that -- that's what you are licensed to practice, correct?

A. Yes. Within an addendum. We are licensed under therapeutic laws, too.

Q. Are you licensed to practice medicine in

the Commonwealth of Massachusetts?

A. No. I'm licensed to practice optometry.

(DUI Affidavit-Blood marked Exhibit No. 7.)

Q. Doctor, I have your CV and some documents that were copied. I put them altogether in this exhibit.

You hold yourself out as a police physician, correct?

A. Yes. That's a position that was given to me at -- yeah.

Q. Right. But you're not a medical physician?

A. No, optometric physician.

Q. Is that a -- and I looked and I tried to find under Massachusetts law exactly what a police physician is and --

A. There isn't any.

Q. There isn't any. This is just a title that the Hingham Police gave you?

A. No. There's an entire organization through the International -- would you like me to answer?

Q. I'm listening.

A. Through the International Association of Chiefs of Police. The definitions in the organization -- there's a subsection in the IACP, which is called police physician. A police physician is an individual -- and you can look that up -- the IACP is a police physician or any licensed practitioners that serve using their skills and training to assist law enforcement in their duties and participation.

This can include dentists, it can include podiatrists, it includes anesthesiologists and includes optometrists.

I was -- to be a member, you have to be approved and submit to the section to be approved. And I have been a member of the Police Physician Section of the International Association of Chiefs of Police for probably 15, 18 years.

Q. So this is a title created by the International Association of Chiefs of Police?

A. Yes, a police physician.

Q. It's not -- you don't have a license to practice police medicine?

A. No. It's similar to being called a

police surgeon in other countries or police chaplain. Chaplains also work for many police departments.

Q. And you are not licensed to make medical diagnoses?

A. I don't follow.

I'm licensed to make medical diagnoses by law. You just show me the definition of my --

Q. Are you licensed to practice medicine as defined by the Massachusetts legislature?

A. I answered that previously. The answer is no. I'm licensed to practice optometry.

Q. You are not licensed to diagnose, treat or use instruments or other devices for another person's physical or mental well-being as defined by the Massachusetts legislature, correct?

A. No. I --

Q. Okay.

A. I'm not clear what your question is.

Q. All right. What is your formal training in pharmacology?

A. Formal training? I went to pharmacy school and then postgraduate training, and then --

Q. You went to pharmacy school in 1960 to 1964?

A. Correct.

Q. Have you done anything else since 1964 formally in pharmacology?

A. Yeah, I teach it.

Q. You teach it where?

A. I was teaching at the pharmacology schools.

Q. How about neuropharmacology?

A. I would teach that, too, specifically in my course work.

Q. What kind of pharmacology do you teach?

A. I'll teach general pharmacology versus and doctorate of pharmacology. I teach general pharmacology and that would include the full range, everything from central nervous system depressants, antidepressants, drugs that -- antiseizure medications. Mostly the central nervous system medications.

Q. You used the term "central nervous system depressants"?

A. Yes, sir.

Q. Is that a clarification of drugs that's

recognized by the Physicians Desk Reference?

A. No. Physicians Desk Reference is not a reference, sir. It's a compilation put together by the drug companies. In fact, most physicians do not even use it as a reference.

Q. Is it a reference at all that can be used by someone interested in the side effects of drugs?

A. Frankly, no. It's not a good reference.

Q. It's not?

Do you know what is in the Physicians Desk Reference?

A. Yeah.

Q. It's the drug labels of --

A. That's correct.

Q. -- drugs that have been approved by the FDA.

A. I'm aware of that.

Q. Isn't it? And the FDA approves these drug labels after doing comprehensive human subject research testing, correct?

MR. PATANE: Objection.

A. Yes.

Q. Right?

A. Is there a question?

Q. Is that correct?

A. Yes.

Q. Right. And this is a compilation of all of the drug labels for drugs that have been approved by the FDA for prescription by a licensed medical personnel, correct?

A. The drug labels that there are in there are the ones from the drug companies. It does not represent a great deal of the literature that the drug companies have excluded.

This is why many physicians, optometrists and others use other references when they have to make a decision on the efficacy of a drug.

If you want to talk about that FDA's drug approval, that's another separate issue.

Q. Okay. That's fine.

Central nervous depressants is not a category of drugs that's recognized in the PDR?

A. It is recognized indirectly, but it's not the way the book is organized.

Q. Give me some examples of central nervous system depressants.

A. The actual drugs? Benzodiazepines would

be one, barbiturates, alcohol.

(Hingham Police Department website marked Exhibit No. 8.)

Q. Are you employed by the Hingham Police Department?

A. No, sir.

Q. Excuse me?

A. No, sir.

Q. No. Okay. I thought it was a requirement to be a drug evaluate -- a drug recognition expert to be employed by a law enforcement agency?

A. You need to be a sworn officer and be on a department. You do not have to be employed by that department. And, in fact, that regulation has changed.

Q. When did that regulation change?

A. It had been modified a few years ago, but, essentially, as long as you are a member of a department or law enforcement agency, that is all that is required. You do not need to be a paid member of that agency.

(The International Standards of Drug Evaluation and Classification Program

marked Exhibit No. 9.)

(IACP Drug Evaluation and Classification Technical Advisory Panel (Updated March 15, 2010) marked Exhibit No. 10.)

Q. Are you still a member of the IACP Technical Advisory Panel?

A. I was appointed two years ago after I retired from that as special consult to the Technical Advisory Panel. I served 16 years on the panel as the medical consult.

Q. Were you a member of the Technical Advisory Panel as of December 31, 2012?

A. No.

Q. Let me show you what's been marked as Exhibit 10. That's a list of members of the Advisory Panel. I think you are on it?

A. Right. And I gave you the reason why.

Q. And it indicates that you are -- you were there -- your appointment ended on 12-31-12?

A. No. I resigned earlier than that. This is an old thing because this said "Updated March 15, 2010," if you noticed that.

Q. Let me show you, sir, Exhibit 9, Page 9, indicates -- you will see October 1, 2012,

indicates what a drug recognition expert requires.

A. Okay.

Q. Do you see "employed by"?

A. Yes. I am on department. I do not receive reimbursement.

Q. When did you first become a drug recognition expert?

A. I believe 2005. I'd have to look at my resume when I finished and went through the entire course.

Q. Are you still a drug recognition expert?

A. Yes, I am.

Q. And those credentials have to be renewed every two years by the IACP?

A. That's correct.

Q. In order to have your credentials renewed, you have to have copies of all your drug evaluations and evaluation logs?

A. And they're submitted to the state coordinator.

Q. And you do drug evaluations?

A. Yes, I do.

Q. And do you have copies of those?

A. Not with me.

Q. But do you have copies? You have an actual log of all of the drug evaluations that you have done?

A. That's correct. That's required.

Q. And then you send them in to the IACP?

A. No. I send them in to the state coordinator.

Q. Of?

A. Of the particular state that you are certified in. And then that goes to the office, they sign-off on it that you have met the requirements, and then you continue for another two years.

Q. Okay. You would agree with me that laboratory research indicated that the Standardized Field Sobriety Tests when administered in a standardized manner were a highly accurate and reliable battery of tests for distinguishing blood alcohol concentrations above a .10 as of 2006?

A. 0.10?

Q. Yes, as of 2006.

A. Yes. It depends on what the reference is

for that.

Q. Here, you take a look at it. I don't need to hog that document.

A. (Witness complies.)

I'm looking at the highlighted --

Q. Yes.

A. That's just a general statement, correct?

Q. I asked you if you agreed with me.

A. Oh, yes.

Q. May I have it back, please?

A. (Witness complies.)

Q. The validation studies were done in Colorado, Florida and San Diego, correct?

A. The most recent ones, yes.

(Validation of the Standardized Field Sobriety Test Battery at BACs Below 0.10 percent marked Exhibit No. 11.)

(A Florida Validation Study of the Standardized Field Sobriety Test Battery marked Exhibit No. 12.)

(A Colorado Validation Study of the Standardized Field Sobriety Test

Battery marked Exhibit No. 13.)

Q. Sir, if you could take a look at Exhibits 11, 12 and 13 and see if you can identify those as the Colorado, Florida and San Diego studies referred to in the 2006 student manual?

A. Yes, that's correct.

Q. You are familiar with those because you've reviewed those as a member of the Technical Assistance Panel?

A. Advisory Panel.

Q. Advisory Panel, I'm sorry.

A. No. These are publications of independent research that's contracted by National Highway Transportation Safety Administration. We don't approve or disprove them.

Q. I didn't ask you if you approve them.

A. I'm familiar with them, yes.

Q. I asked you if you were familiar with them.

A. Oh, yes.

Q. Can you point out for me in these documents whether the researchers referred to impairment in any of those studies?

A. Can I point out?
Q. Yes.
A. I don't believe they -- their purpose, stated purpose, in the hypothesis of the studies was to determine impairment.
What they were after was looking at the relationship of a standardized field sobriety and its ability to either predict a correct arrest and the standardization of a protocol.
There was not the purpose of these three studies to determine impairment due to a BAC level. Their primary reason for that is there's extensive other literature that shows a relationship of alcohol to impairment. That was not the purpose of these studies.
Q. So the answer is "no" then?
A. To my knowledge, there's nothing to impairment. Fair enough?
Q. Yeah. Thank you.
A. Yep.
Q. You are familiar with the -- you were on the Technical Advisory Panel in October of 2009?
A. Yes.
Q. And that panel approved the 2010 version

of the Drug Recognition Expert Student Manual, correct?

A. The curriculum, yes.

Q. The manual?

A. Yes.

Q. The manual itself.

And the manual --

A. Let me clarify. They approved the curriculum which the manual is connected to.

Q. Okay. That's fair enough.

The manual refers to three studies that underlie the idea that a person doing -- following the 12 Step procedure can identify someone who is impaired by drugs, correct?

A. No.

Q. Okay.

A. It's taken out of context.

Q. It refers to three studies, though, correct, the manual itself?

A. It refers to many studies under many parts of the manual.

I'm not clear what particular studies and what functions you're asking or referencing.

Q. Does it refer to a study done by Bigelow

in 1984?

A. Regarding?

Q. Identifying types of drug intoxication, laboratory evaluation of a subject examination procedure.

A. These have to do with the toxicology studies.

Q. But does the manual refer to this study?

A. It refers to the study.

Q. Thank you.

MR. WILLIAMS: Could I have this marked, please?

(John Hopkins Study marked Exhibit No. 14.)

(LAPD Study marked Exhibit No. 15.)

(Arizona Study marked Exhibit No. 16.)

Q. Sir, let me show you Exhibit 14, which is the John Hopkins study; 15, which is the LAPD study; and 16, which is the Arizona study referred to in the 2010 version of the Drug Recognition Expert Student Manual and see if you can identify those.

A. I've seen -- yes, I've seen -- I haven't seen the Bigelow one in many years because it's 30 years old. It's a reference in there. The field evaluation study again is almost 30 years old. These are all the earlier original studies.

Yeah, I'm familiar with them and -- yeah, I'm familiar with them. I don't know them in detail.

Q. Those three studies are specifically mentioned in the student manual --

A. Can you show me where, please?

Q. Yes. Absolutely. I don't mean to trick you.

A. No, no. I want to see the context.

Q. It's under Section 3 Development and Effectiveness of the Drug Evaluation and Classification Process.

A. Okay.

Q. It would be found on Page 4 through 8.

A. Let me see.

Q. There you go.

A. (Witness reviews documents.)

Yes. I'm familiar with that. I see the section. I just didn't see the context here that

you wanted to quoted it in.

Q. You would agree with me that the 2010 manual that your Technical --

A. TAP.

Q. -- Advisory Panel, we'll call it TAP, is that okay?

A. Yes.

Q. TAP. The TAP approved indicates: "The scientific evidence that the examinations provide accurate indicators of drug categories began to be accumulated in the early 1980s?"

A. Yes.

Q. And the manual you just went over lists the three studies that we just referred to as the scientific proof underlying the program?

A. There are three studies that they included in the manual. That does not represent the bulk of the literature out there supporting the categorization.

Q. That's fair.

But they are the three that are referred to in Section 3?

A. Yes. At this point, yes.

Q. Did the researchers conduct -- did any of

them conducted a controlled study starting with people who were drug-free, testing the various vital signs that are referred to in the manual, blood pressure, nystagmus, vertical nystagmus, plus rate, body temperature, muscle tone, that kind've thing?

A. Find out what the results were, list the data and then have those people drive on a test track.

MR. PATANE: Objection.

You can answer.

A. No, because that would not be the purpose of the study. There are other studies. The John Hopkins studies looked at individuals under various specific drugs that fell into the categories and looked at how they met the particular categories of the seven drug categories, but those are not the studies you showed me.

Q. Did any of the researchers, any of the three researchers then take these people who were drug-free and administer selected doses of various drugs from your drug categories, look at the indicators, collect that data and then see

whether the human subject -- research subjects could operate a motor vehicle on a test track?

MR. PATANE: Objection.

You can answer.

A. No. Again, that was not the hypothesis of the study.

Q. These studies don't correlate the presence of drugs with the ability to operate a motor vehicle?

MR. PATANE: Objection.

You can answer.

A. These specific studies do not. There are studies not cited that do.

Q. So there has been a study like the one I just described, where human research subjects are tested before they are administered a particular type of drug, see how they operate, and then the same individuals are given drugs, tested and sent to the test track to see whether those drugs impaired their ability to operate a motor vehicle?

MR. PATANE: Objection.

You can answer.

Q. Is there any research like that?

A. Not to my knowledge and recollection. I can't think of any, off the top of my head, other than there were numerous studies that have been collected on the effects of psychotropic drugs and the type of drugs we are talking about on what are called psychomotor skills and driving. That's a separate whole volume of literature that's been collected.

Q. But nothing --

A. That's not cited here.

Q. No tests, like the one I just described that you are aware of?

Using this data, using your indicators, I'm not talking about psychotropic drugs and --

A. Using specifically our indicators?

Q. Your indicators.

A. Yes. And relating it --

Q. And a person given a therapeutic dose of morphine, for example?

A. No.

Q. Or smokes a joint or is given a Quaalude?

A. Other than the Heishman and John Hopkins studies that I mentioned to you.

Q. But there is no such research out there

that I could look up and see what the results are?

MR. PATANE: Objection.

A. I said the Heishman studies. They looked at a separate set of various categories to see the impairment using the DRE protocols.

Q. But did they actually have people go out on the test track and drive?

A. No, because that's not a valid measure.

Q. I'm just asking.

A. Yes.

Q. Now, you indicate in your report that you specialize in the assessment and treatment of visual problems related to brain injuries and learning related vision problems, is that right?

A. Yes, sir.

Q. Do you diagnose the brain injuries?

A. No.

Q. They are diagnosed by a qualified MD and you treat the eye disease, is that it?

A. I treat the impairments and the conditions that are related to whatever the acquired brain injury is.

Q. Do you diagnose the medical causes of

HGN?

A. Do I -- I'm sorry? The question?

Q. Do you diagnosis the medical causes of horizontal gaze nystagmus or HGN?

A. I can, yes.

Q. Do you?

A. In clinical practice, I have, yes.

Q. That's within your purview, the medical causes?

A. Yes.

Q. What about drug causes of HGN?

A. Yes.

Q. You diagnose that?

A. Yes. And I refer it back to their attending doctor, too.

Q. You diagnose mental or physical impairment caused by drugs?

A. No.

Q. How about do you diagnose mental or physical impairment, period?

A. No. It's not my license.

Q. Neuroophthalmologist is a specialty in the practice of medicine?

A. Yes.

Q. And they are qualified to diagnose optic neuritis?
A. Yes, and so I am.
Q. Optic neuropathy?
A. Yes, and so am I.
Q. Brain tumors or stroke affecting vision?
A. Yes, and so I am.
Q. Unexplained vision loss?
A. Yes, and so am I.
Q. Headaches?
A. Yes, and so am I.
Q. You diagnosed that; aren't those medical diagnoses?
A. Many of the diseases that optometrists do are medical diagnoses. They are within our purview on our license.
Q. You said that your research interests include the effect of nervous system impairment and eye movements?
A. Yes.
Q. Have you done any peer reviewed scientific research using human research subjects to research the effects of nervous system impairment on eye movements? Have you ever done

such a study?
A. That was published?
The only one I did had to do with alcohol, that was in 1994.
Q. Not drugs?
A. Alcohol is a drug, sir.
Q. But not other types of drugs other than alcohol?
A. No.
Q. Opiates, benzos, that kind of thing?
A. No. It's very difficult to get approval to do research in that manner.
Q. Could you do --
A. Actually, may I correct myself?
Q. Yes.
A. I did a paper that was presented at the American Academy of Optometry showing the effects on pupillary function, but you are saying eye movements, correct?
Q. Yes.
A. Okay. Never mind.
Q. That's a little different, I think, if I understand it correctly.
A. Yes.

Q. Here is your CV, sir. Can you identify those articles that deal with the effect of nervous system impairment on eye movements from your list of published articles?

A. Yes, I can. Item 48, Sight Unseen: Vision Care of Acquired Brain Injury was one.

Q. Could you highlight that for me? Just put a highlight next to the number.

A. That we talked about eye movements and identification.

Item 40, The Competency and Accuracy of Police Academy Recruits in the Use of Horizontal Gaze Nystagmus for Detecting Alcohol Impairment.

You want specifically drugs. That's the primary ones that I dealt with.

Let me see if there's another one here.

Is that correct, counselor, basically drugs and eye movements was your question?

Q. The effective nervous system impairment on eye movements.

A. Okay. Well, here's one, Item 53, Tinted Lenses in the Treatment of Visual Stress in a Patient with Traumatic Brain Injury.

And then 44, is a general one, which is

The Influence of Visual Attention and Automaticity on the Diagnosis and Treatment of Clinical Oculomotor, Accommodative, and Vergence Dysfunctions.

I get into issues there on problems that can influence occulomotor. I think that's consistent with what you're asking.

Q. No. 40, The Competency and Accuracy of Police Academy Recruits in the Use of Horizontal Gaze Nystagmus Test for Detecting Alcohol Impairment, would those persons with nervous system impairment, did you discover the lack of smooth pursuit?

A. I don't understand the question.

Q. We're talking about the nervous system impairment.

A. Well, the alcohol-induced nervous system impairment.

Q. Did you discover the lack of smooth pursuit?

A. Yes.

Q. And nystagmus before 45 degrees?

A. We tested that, yes.

Q. Did you discover it?

A. I don't understand the question.
Q. Did you discover nystagmus before 45 degrees in the persons that you tested?
A. That wasn't the study. The study was the --
Q. That's fine.
The Influence of Visual Attention and Automaticity on the Diagnosis and Treatment of Clinical Oculomotor, the same questions, would those people with nervous system impairment, did you discover lack of smooth pursuit?
A. That subject is addressed in the paper.
Q. Did you or didn't you?
A. Did I personally?
Q. Yes.
A. No. That's not what that study -- that's not what that paper was.
Q. Nystagmus before 45 degrees in that study?
A. It's not relevant to my study.
Q. So you didn't. The answer would be "no"? I'm asking yes or no.
A. I don't understand your questions.
Q. Sight Unseen: Vision Care for the

Acquired Brain Injury, which of those people would nervous system impairment did you discover lack of smooth pursuit?

A. That's not the question you asked me to outline this, so I think we're off on the wrong track.

Q. I'm just --

A. I'm answering you, counselor. That's not what you're asking. You're asking did I do an individual study measuring those three things you're asking in brain damaged patients or impaired people. Is that the question you want me to answer?

Q. Is the answer yes or no?

A. To what?

Q. I asked you -- you pointed to this article as one of those articles --

A. You asked me the articles that had to do with eye movements that are potentially related to impaired individuals. Not did I do them personally and did I see nystagmus prior to 45, you changed the criterion in which you're asking me about the qualification of the articles.

If that's the case, then those are not

the correct articles.
Q. Let me just finish my questions.
A. Sure.
Q. Tinted Lenses in the Treatment of Visual Stress of a Patient with Traumatic Brain Injury.
A. Yes.
Q. Which of those people with nervous system impairment did you discover a lack of smooth pursuit?
A. That's not the question you asked me prior.
Q. I'm just asking: Did you find anybody with that condition?
A. In the case study we did. We had significant eye movement dysfunctions. They were quantified, but they were relative to eye movements not specifically lack of smooth pursuit.
Q. So the answer would be "no"?
A. That's correct.
Q. How about nystagmus before 45 degrees?
A. I think I've answered you. If you change the criteria, then those articles do not answer, are not ones relevant to your specific question

now.

Q. The answer is "no"?

A. To all of them, correct.

Q. That's fine.

In your research, have you ever measured, that is, quantified HGN, lack of smooth pursuit, nystagmus at maximum deviation, and measured, that is, quantified alcohol impairment and lined up those two results and discovered that if you know the HGN score then you can accurately predict impairment score?

A. I have no clue what you're talking about. There are five different questions in there. You want to take one at a time?

Q. I'll read it again.

A. Yes.

Q. In your research, have you ever measured, that is to say, quantified HGN, defined as lack of smooth pursuit nystagmus at maximum deviation, 45 degrees, and measured, that is, quantified alcohol impairment, have you ever done that?

A. No, not in my research. In my clinical experience, yes.

Q. Have you published the results of your

clinical experience?
A. No. Most doctors don't.
Q. All right. Are you familiar with the methodological quality QUADAS?
A. I've heard of it. I'm not clear what specific one. You want to define it, I'll be glad to --
Q. Well, starred, are you familiar with those?
A. I don't know what they are off the top of my head.
(An Evaluation of Pupil Size Standards Used by Police Officers for Detecting Drug Impairment marked Exhibit No. 17.)
(The Neurology of Eye Movements, Third Edition marked Exhibit No. 18.)
(Short recess taken.)
Q. Sir, on Page 13 of your report, you quote "The Neurology of Eye Movements," a textbook written by John Leigh and David Zee.
A. Yes. As a reference?
Q. Yes.
A. Yes.

Q. This is a copy of it. I'll give you the book itself that's right there. And you quote "In the clinic, the commonest cause of gaze evoked nystagmus [nystagmus at maximum deviation]" --

MR. PATANE: Is there a page or a line?

MR. WILLIAMS: Page 102.

MR. PATANE: What line?

Q. -- "is medication - usually sedatives, tranquilizers [benzodiazepines] and anticonvulsants"?

A. What is the question?

Q. Where would I find that? You cite in your --

A. I cite the book.

Q. You cite the exact page?

A. Do I cite the page? It's a different version of the book. This is the third edition. Did I do third edition. Hang on, it's under gaze nystagmus. Let me find it for you.

Q. You have Page 102 noted. I'm just asking a question.

A. I know it's in the book. I may have misquoted the page. Let me find it if I might.

Can I do that, counsel?

Q. I just wanted to ask you if that quote is found on that page?

A. The quote is I do not see it on this page because it was a different version. I may have had Volume 2, Edition 2. If I can, I will show you in the book where it is.

Q. It's okay. I'll take the book back. It's okay.

A. It's a valid statement, though.

Q. Let me show you Exhibit 17, An Evaluation of Pupil Size Standards Used by Police Officers for Detecting Drug Impairment. I think that was one of the articles you referred to?

A. Yes.

Q. That is written by -- it has you listed as the primary author.

A. Yes.

Q. What was the normal range for pupil size in people without drugs using the DRE methods?

MR. PATANE: Objection.

You can answer.

A. It depends on the lighting conditions.

I'm not sure what your question is.

Q. Well, hasn't the DRE been using for 32 years a normal range for pupil size 3 to 6.5 millimeters under any condition?

A. Yes.

Q. Right. And what you discovered was that the correct range depended on light conditions, correct?

A. Yes.

Q. And it could be as low as 1.5 and as high as 9 millimeters, correct?

A. No. It depends on the light condition.

Q. Right. Depending on the light condition, pupil size could be as low as 1.5 and as high as 9 millimeters?

A. Not normally.

Q. Well, the normal range depends on light conditions?

A. Correct.

Q. And under some lighting conditions, the normal range could be as low as 1.5, right?

A. Okay.

Q. And under different lighting conditions, it could be as high as 9 millimeters?

A. 8 and a half.

Q. Now, you discovered with that article that the methods being used by the DRE was somewhat incorrect?

A. No. That's not what I stated in the conclusion here.

Q. I know you didn't state it, but you found that the pupil size was fundamentally flawed?

A. No. That's your conclusion.

Q. And when you measured pupil size, you realized that the original standard was wrong?

A. No.

Q. You just told me that the DRE's had been using as a standard 3 to 6.5 millimeters under any condition.

A. That's correct. That was the earlier ones.

Q. Right. Now, did you go back to TAP and say, "Look, I found this really fundamental flaw in our protocol, we really need to do something"?

A. I didn't say that there was a flaw. I said we needed to refine the characteristics of what we had been doing. We did not change the protocols. We changed in the way we interpreted those protocols.

We were always testing under three conditions or four conditions at the time of direct light, near total darkness and room's light.

All this study did was to define it with specific characteristics. It did not say that the others were flawed. That is your terminology.

Q. Did your discover lead TAP to question and investigate the pupil size standard they used for every drug?

A. No.

Q. In fact, none of those have ever been measured scientifically?

A. What have not been?

Q. Pupil size standard for every drug.

A. You mean drug category or every drug that is used with patients?

Q. Every drug.

A. No, that would be impossible.

Q. Did anyone go back and review the method that TAP had used to get the original standard and figure out how that method gave TAP the wrong answer?

MR. PATANE: Objection.

You can answer.

A. TAP was never given a wrong answer, no, that's not correct.

Q. TAP didn't go back and correct the method so that that wouldn't happen again in the future, correct?

MR. PATANE: Objection.

You can answer.

A. No. We did correct it as we do with many things. That is the primary purpose of the Technical Advisory Panel is to constantly review protocols and to upgrade them and modify them based on current literature and studies that are done. That was true with many of the other tests that are done within the DRE protocol.

Q. Sir, if you could take a look at Exhibit 16, which is the Arizona validation study that was done in 1994. Take a look at Table 9, which is on Page 49. It's the measurement of pulse rate and blood pressure?

A. Yes.

Q. Would you agree with me that the blood pressure rates for the human research subjects in

that study were virtually scientifically not different for all of your various drug categories?

MR. PATANE: Objection.

A. No, that's not a correct statement, counselor.

Q. So the average systolic blood pressure for barbiturate users was 124 diasystolic was 85?

MR. PATANE: Objection. He's not looking at the document any more for the record, so there's no way he can follow what you are saying.

Q. Is that correct?

A. Your question is?

Q. The average is 124, the standard deviation is 11?

A. That's correct.

Q. And disatolic is 85 with a standard deviation of 9?

A. Okay.

Q. And then for benzodiazepine, the average blood pressure is 123 and 83?

A. Okay.

Q. There's no scientifically significant difference in those two?

A. Looking at the standard deviations, there could be, but there's likelihood they're not. So I'm not sure what the question is.

Is there any difference in the systolic and diastolic for a barbiturate and a benzodiazepine from what I'm seeing here? No. But there's one flaw in that, you only had seven subjects for barbiturates and only 12 for benzodiazepines. It's an extremely small population.

Q. What about cocaine, it's 126 and 77, the averages?

A. Okay.

Q. There's no really scientific difference between those two?

A. Between 126, 77?

Q. And 123 and 124?

A. Oh, yes, I believe there is. If I run a T test between these two, 83 and 77, with that standard deviation, I'll probably find a significant difference between them.

Q. So 83, it went as high as 100 and as low as...?

A. Right. And these -- the problem is you

have wide standard deviations in a population of 18.

What they don't report in this literature is the means of these individuals, they don't look at the ranges of these individuals, they are only reporting a mean.

When you only report a mean and a standard deviation, you're masking many times the effects. Statistically, without doing a statistical analysis and having additional -- you can't make a judgment on that.

Q. Right. But TAP approved of a drug matrix that indicated that certain drug categories being used would have an effect on blood pressure?

A. Okay. If you're asking --

Q. I'm asking you is that true?

A. What is the question, that they approved the matrix?

Q. TAP approved a drug matrix which is found in that student manual indicating that if a person uses a particular type of drug in a drug category that blood pressure would be high, low or normal?

A. That's incorrect. You want me to explain

the why?

Q. Does the drug matrix do that?

A. No, it does not.

Q. Okay.

A. If you want me to answer, I will, but my answer to you is no.

Q. Now, this is the research that is referred to in that manual we looked at earlier, correct?

A. Yes, sir. That's three citations out of many that were chosen to be put in there.

Q. Can you name me a study, a human research study, that led to the publication of a peer reviewed article indicating that people taking CNS depressants would have reduced blood pressure from the normal?

A. In the Heishman study, the John Hopkins studies, there's two series of them, there's more data there specifically.

Q. John Hopkins study, that's Bigelow?

A. No. Heishman, Stephen Heishman.

Q. Stephen Heishman.

A. There's two separate studies that were done later that are used later on for the

validation. I'm sorry I don't have them in front of me, but Bigelow is not one of the validation studies.

Q. Stephen Heishman, and what was the other one?

A. They're called the John Hopkins studies.

Q. And what is the -- what was the title of that one?

A. They dealt with very specific drugs. They dealt with -- they picked very specific stimulants, they tried cannabis, they had central nervous system depressants, and they looked at the toxicology and looked for the validity of making the judgments.

There are other articles I can give you on the validation of the judgment based on toxicology, several studies that came out of Canada most recently.

In fact, in the past several years they made an analysis of all the studies, and they had different ones.

Q. Who is author of that one?

A. It begins with a B. Off the top of my head --

Q. Is it listed in your appendix?
A. No. Because it was not necessary.
Q. The Ritchman? Richman?
A. No. That's me.
Q. What was it -- what is the name of the other study, that you referred to as the John Hopkins?
A. John Hopkins.
Q. Who was the principal author of that?
A. Heishman.
Q. I apologize, Doctor.
A. But there's even better ones that have come out since.
Q. Has anyone -- you've mentioned specific drugs. I'm asking you a specific question.
A. Which is?
Q. Has anyone published a peer review scientific article indicating that persons taking drugs in your drug category, CNS depressants, will have reduced blood pressure, not specific drugs, but CNS depressants?
A. Yes. There's numerous articles specifically on CNS depressants. When we get into that literature, if we go into pub med, we

can pull up many references that CNS depressants has a side effect. I may be able to find that for you specifically in the PDR, but individual drugs, we look at their adverse effects, many of them will lower blood pressure.

Q. Many of them will. But your matrix that's included in the DRE manual indicates it will be down?

A. I just said that. But I said the matrix is not -- that's not the purpose of the matrix. The matrix is a guide.

Q. It's not a scientific -- this is not based on specific scientific research, it's just a guide?

MR. PATANE: Objection.

A. It is based on research, but the purpose of it is a generalization that, as an overall group, central nervous system depressants, will have a high probability of reducing and lowering blood pressure.

With great simple ease, I could give you those articles, but that was not what we did with the matrix.

Q. The matrix is -- in fact, the only

organization that recognizes this drug matrix is the TAP and its parent organization, correct?

A. The matrix or DRE program?

Q. No, the matrix itself.

The only organization, scientific or otherwise, the only organization that recognizes this is your TAP and the International Association of Chiefs of Police, correct?

MR. PATANE: Objection.

You can answer.

A. I don't know how to answer that unfortunately because it doesn't recognize it as a scientific document.

Q. Okay, thank you.

Other than you, is there any other member of TAP, when you were serving on it, is there any other member of TAP that's a scientist?

A. Yes. There's toxicologists.

Q. There's a toxicologist?

A. And there were subcommittees not listed who would serve in specific areas. There was a subscientific committee that individuals could be drawn on, and third, while I served on it, there was a physician out of Maryland State Police that

was also on the committee for a number of years, and there presently is still one. He happens to be an emergency room physician and he's a physician for Maryland State Police.

Q. What is his name?

A. Donald Alves, A-L-V-E-S. That's the present one. The other one was Phil Phillips.

Q. Now, when you were serving on the TAP, you were the medical expert on the drug recognition expert test?

A. I was not the only one. I was the primary one, but I had a subcommittee of people not listed that we would call upon as other members of the committee could draw on as well.

Q. Well, in your report you indicate that you were the medical expert?

A. That's correct. I was the primary person because there's only one appointment at the time.

Q. And you are familiar with DIE test standards?

A. DIE test standards?

Q. The drug recognition test standards.

A. DRE?

Q. DRE, yes.

A. Yes.
Q. And their development?
A. Yes.
Q. Their scientific principles?
A. Yes.
Q. Scientific basis?
A. Yes.
Q. And the scientific literature about this?
A. Yes.
Q. Did you define standards --
MR. PATANE: Objection.
Q. -- for the drug recognition test?
A. Personally? No, I did not.
Q. Did TAP?
A. The TAP committee makes the decision.
Q. I understand they make a decision. But did TAP define standards for the test, scientific standards for the test?
A. For the Drug Recognition Expert Program?
Q. Yes.
A. They would define standards that would be taught in the curriculum.
Q. Right. But did you define, you, the members of the committee, specifically the

members of the committee that approved the 2010 manual, define scientific standards for the test?

A. To my knowledge, yes.

Q. And where would I find the scientific standards in there?

A. They are not in there.

Q. Okay. Where would I find them?

A. They would be part of the curriculum committee. They would be part of my personal papers, be part of other members' papers.

That is a curriculum manual, that is not the scientific standards.

Q. Tell me what the scientific standards are then?

A. I'm not sure which ones you want.

Q. For the test. Tell me what the scientific standards are for the test.

A. For the test?

MR. PATANE: Objection.

You can answer.

A. Scientific standards would be based on all the literature available on any particular function, and any studies that may be out there relative to determining whether someone was

impaired or not impaired or how they deviated from normal or average.

Q. But what are they?

A. What are they?

Q. Yes.

A. They are published articles.

Q. No, but -- you said that you defined -- you did define standards for the test and I'm asking you what are they?

A. I just answered you.

Q. No. I'm asking you. If I ask you for the standard for the test to determine a particular eye disease, you can tell me what it is?

A. No, I can't.

Q. Yes, you can?

A. I don't understand what your -- maybe I'm confused by your question.

What is the standard that you are after?

Q. The scientific standards underlying the 12-part test.

A. I believe you've asked and I've answered you that there's a large body of literature on each one of the tests.

Q. No. I'm asking you what the standards you have developed at TAP for this test?
A. The standards we developed?
Q. That you define and use.
A. We look at and I just --
Q. I know what you look at.
A. No, I answered --
Q. You won't answer my question.
A. I did answer your question.
Q. You won't tell me what they are. What are they?
A. I did. I said the standard is we look at what is the normal function for that particular test, and then we look at that deviation from that.

For example, if we look at pupil size, if we look at a pulse rate, we define it based on all the available literature of what is a normal non-impaired individual. We set that as the basis of what is normal and then we look for deviations from that.

Q. What is the normal pupil size for someone using a therapeutic dose of morphine?
A. That's not a normal non-impaired person.

Q. No, it's the normal -- what --
A. That's an impaired person.
Q. What is the pupil size for someone using a therapeutic dose of morphine?
A. That is not a normal person.
Q. I'm not asking about normal. I'm asking what's the pupil size.
A. The pupil size can be anywhere from two millimeters to five millimeters. And it all depends on the dosage, the time. We don't define it on that basis.
Q. What is the pupil size of someone using a therapeutic dose of buprenorphine?
A. Same answer.
Q. What?
A. That it is not normal non-impaired person.
Q. I'm not asking about you a normal non-impaired person.
A. You asked me what the standards are. We use our standards.
Q. You have to have a standard to determine whether a pupil size is high, normal or low?
A. That's correct. And we simply say that

it is deviated from the normal non-impaired. We do not base it on morphine, we do not base it on buprenorphine or Patanol. We base it on the fact that person is deviated from the normal non-impaired person in that category. That is all that the DRE is required to do. They are making an opinion that this person's pupils appeared to be outside the average range for a normal non-impaired person.

So I don't follow your question. That's how we make our standards.

Q. Someone high on morphine will have normal pupil size?

A. Someone who is on -- been treated with morphine on a therapeutic dose and has been taking it on a regular basis, their pupils over a period of time can start to fall into the low average for normal individuals.

Q. You didn't answer my question.

A. I think I did.

Q. I said somebody who is high on --

A. High? What is high, sir?

Q. Isn't that the problem?

A. Yes. And "high" means that they have

abused the drug. Is that a better term?

Q. Someone taking more than the therapeutic dose of morphine --

A. Okay.

Q. -- and is impaired by that drug --

A. That's correct.

Q. -- will have normal pupil size?

A. No, they will not. That's not what you asked me. This question I agree with you.

Q. And someone who is using heroin on a regular basis, but is going through withdrawal, will have what size pupil?

A. They can have larger pupils.

Q. But they can still be under the influence of the narcotic drug?

A. That's correct.

Q. Even when going through the withdrawal?

A. They are under the influence of being on the whole body trying to readjust, so they are now impaired, but not due to the drug. They are impaired due to the imbalance in the nervous system.

This is good. You are learning to be a DRE, counselor.

Q. Now, you can't define for me what the standards are for your DRE test?

MR. PATANE: Objection.

Q. Were your deliberations for TAP published?

A. Yes. They're all minutes that were recorded and I believe they are available to Washington, D.C.

Q. And are they peer reviewed?

A. The minutes?

Q. Yes.

A. Not to my knowledge.

Q. Your work at TAP, is it peer reviewed?

A. It's not -- not to my knowledge. It's an advisory committee.

Q. Well, that approves this drug recognition manual, right?

A. Okay.

Q. Right?

A. I don't believe the FDA is peer reviewed and they approve many things.

Q. Is any of your work published in peer review journals?

A. My personal work?

Q. No, the work of the TAP.
A. The work of the TAP? No, it's reversed. The TAP uses peer-reviewed information.
Q. So the answer is "no"?
A. Yes.
Q. And you all work for the International Association of Chiefs of Police which is a police agency?
A. No. We don't all work for them. We work for many different agencies.
Q. But you -- within your work as the member of TAP?
A. Yes.
Q. On Page 7 of your report you indicate that it's your opinion to a degree of professional certainty. What does that mean, "professional certainty?
A. Based on my 45 years of experience, my training, my education. I'm making an opinion.
Q. Right. But that's not a medical opinion?
A. It is a medical opinion because I am licensed as an optometric physician in two states.
Q. You didn't say to a reasonable degree of

medical certainty?
A. No. I'm not sure which one, I cited the different ones. It may not require me to say to a medical certainty.
Q. And you didn't say it was to a degree of scientific certainty?
A. I said to my professional.
Q. I understand. I'm just asking you questions.
A. Yep.
Q. You didn't say scientific certainty, correct?
A. It's implied.
Q. You didn't say it was a physiological certainty?
A. It's implied.
Q. Is that yes or no?
A. Yes.
Q. So did you say that it was to a reasonable degree of physiological certainty?
A. It's to a degree of professional, medical, biological certainty based on my opinion and my professional experience.
Q. "...that the Standardized Field Sobriety

Test procedures applied by Trooper Carlson were, for the most part, entirely consistent with the national standards approved by the International Chiefs of Police and the National Highway Safety Administration, correct?

A. (Pause.)

Q. Is that what your opinion is?

A. Is that what it says here?

MR. PATANE: Well, for the record, the witness is not looking at the document so it's hard for him to confirm the exact language.

A. By the International Chiefs of Police and National Highway Traffic Safety Administration, yes.

Q. Are there any scientific documents that identify and enumerate the standards of the Standardized Field Sobriety Test?

MR. PATANE: Objection. That's been asked and answered about a hundred times, but you can answer.

A. Could you repeat the question?

Q. Is there a scientific document identifying and enumerating the standards of the Standardized Field Sobriety Test?

A. There's no standard documents that defines the standards in which these decisions are made.

Q. Okay. Could you turn to Page 11?

A. Yes.

Q. No. 3. "It is my opinion to a reasonable degree of professional certainty that Horizontal Gaze Nystagmus can be used effectively to detect central nervous system impairment due to alcohol as well as drugs?

A. Yes.

Q. Did I read that correctly?

A. Yes.

Q. Sometimes I don't.

And then B, to refine that: "In my opinion, based on the references in Appendix I, eye movements have consistently been reported to be impaired by alcohol, central nervous depressants, inhalants and dissociative anesthetics and will exhibit the characteristic signs of loss of smooth pursuit, nystagmus at maximum deviation, and onset of nystagmus prior to 45 degrees."

A. Yes.

Q. Let me hand you one of the books that you referred to, The Neurology of Eye Movements.

A. Yes.

Q. I have a few questions.

Can you show me in that book where alcohol impairs eye movements?

A. Correct. Page 430.

MR. PATANE: Which edition is that?

THE WITNESS: Third edition.

Q. What does it say?

A. It says "Most commonly gaze of both nystagmus as a side effect of medications, including sedatives and anticonvulsants or is due to intoxications with drugs especially alcohol. It's on Page 430.

Q. How about inhalants?

A. An inhalant is a drug.

Q. Specifically inhalants as used in your drug matrix.

A. The category of inhalants is of an extremely wide group of drugs, but this refers to drugs as a general category.

Q. Right. But I'm asking you whether that book indicates that inhalants specifically impair

eye movements?

A. Inhalants? I would have to look up each individual type of category in here. And if you'll give me a moment, I will potentially find one for you.

I don't believe they break these down by drugs per se. Let me see if I can find it. This book is geared more toward the neurology.

I don't believe I can find one immediately in here.

I've answered your first question, but you say specifically an inhalant?

Q. Correct.

A. I don't know how they have this setup. Let me see. If not there was another reference I gave you in here, Frauenfelder that's listed here. A drug introduced occular side effects.

No, I can't immediately put my finger on one here as I did for what you asked before, okay?

Q. Dissociative anesthetics?

A. Yes.

Q. Where is it that it showed it was impaired in that book?

A. Dissociatives? You didn't ask me that. You asked me inhalants.

Q. I know. I'm asking you a different question.

A. In here, I said they only have certain drugs in here. Mostly, antidepressants -- I'm sorry. Mostly I can occasionally find a specific drug, but very rarely.

Let me see if I can find dissociative anesthetics, which I doubt because most of those are illegal. Let me see I can find it.

Not in this book.

Q. Fast-acting CNS depressants --

A. Yes.

Q. -- would I find it in that book?

A. No. You will find depressants, but not a specific category of fast acting. That's a pharmacological book. This is not a pharmacological book.

(Sobriety Tests for Low Blood Alcohol Concentrations marked Exhibit No. 19.)

(Nystagmus Testing in Intoxicated Individuals marked Exhibit No. 20.)

(Carisoprodol, Meprobamate, and Driving Impairment marked Exhibit No. 21.)

(Testing for Benzodiazepine Inebriation-Relationship Between Benzodiazepine Concentration and Simple Clinical Tests for Impairment in a Sample of Drugged Drivers marked Exhibit No. 22.)

(GHB and Driving Impairment marked Exhibit No. 23.)

(Indexing Cognitive Tests to Alcohol Dosage and Comparison to Standardized Field Sobriety Tests marked Exhibit No. 24.)

(The Competency and Accuracy of Police Academy Recruits in the Use of the Horizontal Gaze Nystagmus Test for Detecting Alcohol Impairment

marked Exhibit No. 25.)

(Effects of Alcohol and Other Psychotropic Drugs on Eye Movements: Relevance to Traffic Safety marked Exhibit No. 26.)

(Gaze Nystagmus and Blood Alcohol Page 2 of 3 marked Exhibit No. 27.)

(Disorders of Eye Movement marked Exhibit No. 28.)

(Distribution of GABAA and GABAB Receptors in Mammalian Brain: Potential Targets for Drug Development marked Exhibit No. 29.)

Q. Sir, let me show you Exhibit 19, it's the McKnight article --

A. Yes.

Q. -- on sobriety tests for low alcohol concentrations?

A. Yes.

Q. Does that article have any information in

this indicating that Horizontal Gaze Nystagmus can be used effectively to detect central nervous impairment due to alcohol?

A. Does it have anything specific?

(Pause.)

Yes. It has evidence of low blood alcohol levels and that HGN will be present even in low blood alcohol levels.

Q. Correct. But low blood alcohol levels don't necessarily mean impairment.

Does that article stand for the proposition that HGN can be used effectively to detect central nervous system impairment?

A. It does not state impairment.

Q. How about CNS depressants?

MR. PATANE: Objection.

Q. Impairment by CNS depressants?

A. That's not the purpose of this article.

Q. Inhalants?

A. No.

Q. And dissociative anesthetics?

A. No.

Q. Sir, let me show you the sci-tech article, Nystagmus Testing in Intoxicated

Individuals.

A. Yes.

Q. Does it indicate HGN can identify impairment by alcohol?

A. Yes.

Q. Could you point that language to me?

A. The language basically is nystagmus is present in intoxicated individuals. That is impairment. Nystagmus itself, its presence is impairment. Nystagmus itself of the types that are measured in HGN are signs of central nervous system impairment. It's a standard within medical knowledge.

Q. Can you just read that to me?

A. It's not here.

Q. Okay.

A. It's an understood.

Q. What about CNS depressants?

A. This deals primarily with alcohol.

Q. The answer is "no"?

A. No.

Q. And inhalants?

A. No.

Q. And dissociative anesthetics?

A. No. This article does not refer to that. It's article that deals specifically with alcohol.

Q. Exhibit 21. The Logan article on Carisoprodol, Meprobamate, and Driving Impairment. Same question.

A. Yes.

Q. Is there anything in that article that you can point to specifically that horizontal gaze nystagmus can be used to detect central nervous system impairment due to alcohol?

A. Carisoprodol is extensively metabolized to Meprobamate, which is a central nervous system depressant with sedative hypnotic properties, so it defines what it's doing in its pharmacological effect. It has enough dosages.

Let me find it right here.

Q. We're talking about HGN?

A. You said about CNS depressants.

Q. I said is there anything in that article indicating that HGN can be used to effectively detect central nervous system impairment due to alcohol?

A. In this -- that's not the question you

asked me prior. So if that's the new question, the answer is no. This is an article not about alcohol. It's about central nervous system impairment depressant and driving, and it has very specific references to the effects on driving and the impairment.

Q. How about HGH can be used effectively to detect central nervous system impairment due to CNS depressants?

MR. PATANE: Objection.

Q. Does it have anything about HGN being used to effectively detect central nervous system impairment due to the depressants?

A. Yes. Under the "Conclusions," CNS depressants. "As with other more common CNS depressants, divided attention, coordination," HGN will be part of a coordination so it would be walk and turn and one-leg stand. Judgment and decision making other skills essential to safe driving can all be affected by the meprobamate which is a central nervous system depressant.

Q. Is that based on their own original research or is that footnoted?

A. No, that's in their conclusions.

Q. Is that their own research?
A. I don't know how they drew that conclusion. You would have to ask them.
Q. How about --
A. I can cite their other references, if you wish. They have 27 references that deal with that question.
Q. How about inhalants, does that article stand for the proposition of central nervous system impairment?
A. No. Because it was not a study on inhalants.
Q. And dissociative aesthetics?
A. No.
Q. That's fair enough. That is Exhibit No. 22. That's the Bramnes article on "Testing for Benzodiazepine Inebriation," is that right?
A. Uh-huh.
Q. You have to say yes or no.
A. Yes.
Q. Is there anything in that article, based on their original research indicating that HGN can be used effectively to detect central nervous system impairment due to alcohol?

A. Due to alcohol?
Q. Yes.
A. In their research?
Q. Correct.
A. No, because they're not talking about alcohol in this one. They're talking about benzodiazepines.
Q. Is there any original research in that article indicating that HGN can be used effectively to detect impairment due to a CNS depressant?
A. Yes.
Q. Where would I find it?
A. In the title. Benzodiazepine is a central nervous system depressant.
Q. I'm asking a specific question.
A. That's my answer.
Q. HGN can be used effectively to detect central nervous system impairment due to a central nervous system depressant?
A. On horizontal gaze nystagmus?
Q. Yes.
A. Benzodiazepine is a central nervous system depressant and it will -- I have to see

how they define something here.

MR. PATANE: Take your time.

A. Yes. They specifically used a protocol that they called CTI25, and under that protocol, under vestibular function -- this is on Page 595 -- they specifically report that one of their protocol was horizontal gaze nystagmus and that they noted percentage of impaired individuals. So the test was used as part of their protocol.

And then in their conclusions, they find that the benzodiazepine, in fact, specifically diazepam was -- so they definitely have horizontal gaze nystagmus. They do -- this group with elevated benzodiazepine concentrations were included as a reference.

And basically the conclusions in the very first -- under their abstract, it says "Conclusions: Many of the simple clinical tests" -- which they define -- "includes the horizontal gaze nystagmus" -- it states -- "are included in the Standardized Field Sobriety Test and are a value in revealing benzodiazepine impairment under the "Conclusions."

Q. You are aware that Ms. Sukoc gave a sample of her blood for testing?
A. Yes.
Q. And that sample was sent to NMS Labs?
A. Yes.
Q. You have seen the report?
A. Yes, I did in my original things.
Q. Her blood was tested for the presence of benzodiazepine?
A. Yes.
Q. And it was negative?
A. According to their report.
Q. Does that paper talk about inhalants --
A. No.
Q. -- and effect of HGN and impairment?
A. No.
Q. And dissociative anesthetics?
A. No.
Q. That talks about a specific drug Diazepam --
A. Which is a --
Q. -- with a HGN present?
A. Yes.
Q. And Ms. Sukoc was tested for Diazepam and

it was negative?
A. Based on that -- on those tests, but those tests have questionable validity.
Q. I'm sure they do.
GHB and Driving Impairment is the next article.
A. That's Gamma hydroxybutyrate.
Q. Yes, the so-called the date rape drug, right?
A. Yes.
Q. Isn't that what is referred to as in the community?
A. Yes.
Q. So there would be no reference in that to alcohol?
A. No.
Q. Inhalants?
A. No.
Q. Or dissociative anesthetics?
A. GHB is often considered under the category of dissociative anesthetics.
Q. It wouldn't come under CNS depressants?
A. It could fall into both categories.
Numerous specific drugs can fall anywhere from

two to four categories.

Q. In the drug matrix that the TAP produced, correct?

A. That's correct.

Q. Not in any other scientific identification?

A. Of course if does in others. It depends on dosage level. If I can give an example? I guess not.

Q. Ms. Sukoc was tested for GHB by National Medical, NMS Labs?

A. GHB, yes.

Q. She was tested for GHB from her blood sample, correct?

A. Yes.

Q. And that was negative?

A. Correct. Blood sample was inadequate.

Q. Blood sample was inadequate, where did you see that?

A. It's stated on there. It has two milliliters. That's an extremely low sampling. That would have an effect on the potential judgment and the analysis by the lab in my experience.

Q. Do you test blood for drugs?
A. No, but I deal with toxicologists.
Q. You've never tested any blood for drugs?
A. No. But I read many reports.
Q. And NMS Labs does that for a living?
A. Yes. And they even stated on the bottom that the size of the sample was two milliliters.
Q. If the sample size was too small to get an adequate and reliable test result, they would have so stated?
A. They may have. Not to my knowledge, but they may have contacted the person who submitted it, which would've been the drug recognition expert or their agency.
Q. You read Officer Plunkett's deposition?
A. That was early on, yes.
Q. Do you have any evidence that NMS Labs ever contacted the Vermont State Police?
A. Do I personally?
Q. Or Officer Plunkett, yes.
A. Perhaps Officer Plunkett does.
Q. No, but do you have any information that NMS Labs ever contacted any of the police officers involved this stop indicating that the

blood sample was inadequate?
A. It was limited and it had potential problems with it. I believe Officer Plunkett was notified.
Q. Of that fact?
A. I believe so.
Q. Where would I find that?
A. I don't know. There may have been -- it may have been omitted, but my initial response --
Q. Have you talked to Officer Plunkett?
A. No, I have not.
Q. You read his deposition and his report?
A. Yes.
Q. Is there any information in either of those documents?
A. No. Because he's going on his evaluation, not the toxicology. I'm responding based on my professional experience that I saw that sample was very small. So it may be undiscovered information at this point, but it was part of forming my opinion.
Q. Discovered information?
A. I formed an opinion based on what I read regarding -- and I stated that in my statement

here. Correct? My concerns with the lab and how they may have -- may not have detected the various drugs that are there.

Q. If you could show me where you put in your report that there's an inadequate sample of blood, I --

A. No. I didn't say that I put that in my report. I questioned the lab conclusions of the absence of a particular drug in there.

Q. That's fair enough.

A. I'll show you exactly -- well, if that's fair enough, then fine.

Q. Indexing Cognitive Tests to Alcohol Dosage in Comparison to Field Sobriety Testing, this is 24. That's Exhibit 24. That doesn't address CNS depressants, correct?

A. That's not the purpose of the article.

Q. Inhalants?

A. No.

Q. Or dissociative anesthetics?

A. No.

Q. Your own article, Exhibit 25, Competency and Accuracy of Police Academy Recruits?

A. That deals with horizontal gaze nystagmus

and alcohol primarily.

Q. It doesn't deal with CNS depressants, inhalants or dissociative anesthetics?

A. It did not include a central nervous system impairment unless I clearly qualify alcohol as a depressant, which a standard in pharmacology.

Q. Stapled to Exhibit 26 deals with alcohol, correct?

A. Yes.

Q. But not CNS depressants?

A. This?

Q. Yes.

A. Sure, it does. It says specifically barbiturates, benzodiazepine, and opioids.

Q. Where does it refer to horizontal gaze nystagmus?

A. Only in their introduction where they say that "Driving consists primarily of a tracking task. These tasks require precise oculomotor control, drug effects on eye movements could have an important impact on traffic safety."

This is not a specific scientific research. This is more of a review article.

Q. So no original research in that one, that's just a review?

A. And it's citing many, many other references which I think are pertinent.

Q. This is Goding?

A. George Goding.

Q. George Goding, G-O-D-I-N-G. It's hidden behind a pay wall, so I couldn't print it all out. But apparently this deals with horizontal gaze nystagmus and blood alcohol?

A. Yes, I know the article.

Q. It doesn't deal with CNS depressants, inhalants or dissociative anesthetics, correct?

A. No. I still go to my definition, CNS depressants include alcohol.

Q. Excluding alcohol, I'm talking about all the other CNS depressants, it does not address that, correct?

A. Right.

Q. Okay. This is Exhibit 28, Wilkinson, this is The Influence of Drugs and Alcohol in Human Eye Movement?

A. What is the date on that?

Q. This is 1976.

A. That's a really -- yeah. Let me see something.

And the question is?

Q. Any original research in that article indicating that HGN can be used to effectively detect central nervous system impairment due to alcohol?

A. Yes. This is written by Dr. Wilkinson and he cites his own research which was done in '74. It's in a bibliography. Wilkinson I M S, Kime, K-I-M-E and Purnell, P-U-R-N-E-L-L, published in Brain 1974, where he specifically states that alcohol dosage -- severe impairment on smooth pursuit movement, and he gives two other references of published data specifically relating to other central nervous system depressants. He at least confronts for alcohol in his own study.

Q. How about CNS depressants?

A. He sites three other people.

Q. Any original research?

A. Not that he put in his bibliography.

Q. How about inhalants?

A. No.

Q. How about dissociative anesthetics?
A. Nope.
Q. This is A.B. Young, Distribution of GABAA and GABAB Receptors in the Mammalian Brain?
A. Yes.
Q. Any original research in that article indicating that horizontal gaze nystagmus can be used to determine central nervous system impairment in humans due to alcohol?
A. No. This study was done on dead people.
Q. Across the board it doesn't address the issue?
A. No. Because they couldn't test the eye movements on dead people.
Q. These are the three validation studies for the standardized field sobriety testing?
A. Yes.
Q. Now, we're specifically talking about impairment, not blood alcohol concentration.
Is there anything in that document indicating that HGN can be effectively used to detect central nervous system impairment as opposed to alcohol concentration?
MR. PATANE: Objection.

A. No.
Q. The same questions for CNS depressants, inhalants and dissociative anesthetics?
A. No. That's not the purpose of those studies.
Q. How about the Florida study?
A. Same thing. San Diego correlates HGN specifically to blood alcohol levels.
Q. But not impairment?
A. They didn't use the word "impairment." The assumption is that HGN is impairment.

(The Methodological Quality of Three Foundational Law Enforcement Drug Influence Evaluation Validation Studies marked Exhibit No. 30.)

(The Robustness of the Horizontal Gaze Nystagmus Test marked Exhibit No. 31.)

(Horizontal Gaze Nystagmus: A review of Vision Science and Application Issues marked Exhibit No. 32.

(293 The Standardized Field Sobriety Tests: A Review of Scientific and Legal Issues by Stephen Rubenzer marked Exhibit No. 33.)

(Neuro-Ophthalmology, Third Edition by Joel S. Glaser marked Exhibit No. 34.)

Q. Sir, let me show you Defendant's Exhibit 32. It's an article. The lead author is Steven Rubenzer, R-U-B-E-N-Z-E-R, Horizontal Gaze Nystagmus: A Review of Vision Science and Application Issues.

Are you familiar with that article?

A. Yes.

Q. And you are familiar with his conclusion that HGN is limited by large variability in underlying normative behavior for methods in testing environments that are often poorly controlled and from lack of vigorous foundation in laboratory settings?

A. That's one statement from the article. I can cite others. I could be glad to.

Q. That's the conclusion?

A. I don't agree with it. That's a conclusion that's not based on his article. That's only taken out the context.

Q. You didn't site this article in your --

A. No, I had no reason to. It's a review of -- it's a selected review of articles that are biased.

Q. Rubenzer is Exhibit 33, Standardized Field Sobriety Tests: A Review of Scientific and Legal Issues, are you familiar with that article?

A. Partially, yes.

Q. And that's in law and human behavior?

A. Yes.

Q. In this article: "It is concluded that the research that supports their use is limited, important confounding variables have not been thoroughly studied, reliability is mediocre, and that their developers and prosecution-oriented publications have oversold the tests."

Are you familiar with that conclusion?

A. I am familiar with parts of it.

May I look at it?

Q. Oh, yeah, absolutely. It's in there?

A. Yes. This is a review that he did.

There's no original research. It's a META analysis, and he also concludes that SFSTs do show substantial correlations with BAC, subject -- HGN has repeatedly demonstrated higher correlations with BAC. So he does cite some of these. And when you get into more, then it gets into opinion and editorializing rather than scientific paper.

So, overall, this is -- as he says, it's a review, it's an editorial. It's based on his personal opinion. It's not a scientific paper, in my opinion.

Q. Are you familiar with Marcelline Burns "The Robustness of the Horizontal Gaze Nystagmus Test," a study that was done for the NHTSA?

A. Yes.

Q. They tested subjects using a videotape, correct, in this one?

A. No, they did live subjects as well.

Q. But they actually videotaped the eye movements in this one?

A. Yes.

Q. And you are aware that at the two-second speed, lack of smooth pursuant was reported for

both eyes for all of the participants in this study, including those with alcohol concentrations of below 08?

A. What was the conclusion again?

Q. The conclusion is -- it's a statement. At the two second speed, LSP, or lack of smooth pursuit was reported for both eyes for all participants in this study?

MR. PATANE: Objection. For the record the witness is not looking at the document.

Q. I'm asking --

MR. PATANE: Counsel is reading from it.

A. That's a conclusion and I believe the statement is correct as it's stated.

Q. Here. It's on Page 15 and in the gray.

A. So they basically said it was not expected at low BACs.

Let's just go back as there's something else I just want to check here. Let me just check something here.

Okay, the question -- if you may repeat your question relative to what you have highlighted?

Q. The only -- I was just asking if she

reported at the two second speed lack of smooth pursuit was reported for both eyes for all participants, that's what she reported based on her data?

A. Yes. As the standard protocol, yes.

Q. Table 15 indicates that officers were given many of the human research participants scores of four or six when their blood alcohol concentration ranged between 02 and 079?

A. When the speed was changed?

Q. No. You can look at the table, if you want. It's Table 15.

A. But there's a summary table that took place.

Q. Right. You can see those are the actual scores?

A. Right, okay, but then there's a summary table of her conclusions.

Q. No, I understand that. But you would agree with me that that table sets out the data?

A. It sets out the data.

Q. You can see HGN was given from different --

A. But this table deals not with speed, this

table deals with stimulus distance, not speed.
Q. I know, and it deals with scoring.
A. Okay. So, I'm not clear what the question is. The first one was about speed. This one is a different question?
Q. Yes. You can see that the scores range between four and 6=six for many of the scorers when the alcohol concentration was below a 08?
A. Okay.
Q. Would you agree with me?
A. From what this data shows.
Q. You are aware of that data?
A. I'm aware of the data. There's nothing wrong with that conclusion in seeing that. That occurs -- that was the purpose of the study, it was show the robustness.
And also, I must make something very clear as it goes to the speed. It says in the protocols, approximately two seconds, it does not say two seconds.
Q. Now, Joel Glaser published a textbook in Neuro-Ophthalmology, are you familiar with this textbook?
A. I'm familiar with Joel Glaser.

Q. This is a Lippincott textbook, I'm told cost $1,000?

MR. PATANE: Can you just say what edition it is and what year it was published?

MR. WILLIAMS: Third rd edition, 1999.

A. That's a newer one.

Q. Page 390, Dr. Glaser indicates: "Unfortunately, the fact that alcohol can produce horizontal gaze-evoked nystagmus has led to a roadside sobriety test conducted by law-enforcement officers. Nystagmus as an indicator of alcohol intoxication is fraught with extraordinary pitfalls: many normal individuals have physiologic end-point nystagmus; small dosages of tranquilizers that won't interfere with driving ability can produce nystagmus; nystagmus may be congenital or consequent to structural neurological disease; and often a sophisticated neuro-ophthalmologist or oculographer is required to determine whether nystagmus is pathologic. It seems unreasonable that such judgments should be the domain of cursorily trained law officers no matter how intelligent, perceptive, and well meaning they

might be."

A. Okay. And the question is?

Q. Are you familiar with his conclusion?

A. That's an opinion, not a conclusion based on any evidence that he put in that book.

Q. So are you familiar with his opinion?

A. Sure.

Q. You didn't mention it in you're appendix?

A. I don't put opinions and editorials. That would be like putting Rush Limbaugh's opinions.

Q. Exhibit 30 is an article written by a Dr. Greg Kane, The Methodological Quality of Three Foundational Law Enforcement Drug Evaluation Validation Studies.

Are you familiar with this article?

A. Yes.

Q. It was published about, I don't know, within the last six weeks.

A. Yes. Well, no, that's the more current one. Let me see that if I might. That's the newer one that he just did, yes.

Q. Are you read that?

A. Not this newest one. This came out in

Journal of Negative Results, yes, 2013.

And the question is?

Q. You are not familiar with that article?

A. No, not specifically. I was told about it. But I'm also familiar with most of his other articles. And, again, these are -- if I might, these are not individual studies. These are reviews and opinions. They are editorials.

Q. That's a peer-reviewed scientific article, isn't it?

A. So are many times reviews, okay, as long as they put the right things and they cite them, then they can state whatever they wish in a review, but a review is not an independent study.

Q. Those are the three validation studies that we talked about Florida, Colorado, and San Diego?

A. Yes, sir.

Q. Can you show me where HGN scores predicted driving scores?

A. No.

Q. Walk and Turn scores predicted driving scores or where One Leg Stand predicted scores predicted driving scores?

A. There's no test of driving. There was studies correlating this to correct arrests relative to be supported by BACs. Therefore, there are information in here that shows high accurately of HGN Walk and Turn and One Leg Stand specifically in San Diego as it relates to BAC levels and to correct arrests. If a correct arrest would have been based on three parts of a Standardized Field Sobriety Test, which includes observation of operation of the driving, so...

Q. What scientific formula was used to indicate the accuracy of the test?

MR. PATANE: Objection.

A. Of which test? The alcohol to the HGN?

Q. Of the three tests. You said that they were accurate?

A. They do what's called a KHI square and they determine the sensitivity and specificity level of the relationship of the presence of horizontal gaze nystagmus and the blood alcohol level. And I can cite you specifically, if I might, in the San Diego study where they had it to be a very high correlation, I believe at .88 to the BAC levels.

Q. What scientific mathematical formula do scientists use to calculate the probability that when a person has horizontal gaze nystagmus, the person is impaired by a drug?

A. They will use a -- I'll tell you exactly. They did a KHI square to determine the sensitivity and specificity. This is a probability. And it's a decision matrix that is a standard method to determine how well something -- one's test will predict the outcome of another. And that's a standard protocol that was used specifically in the San Diego study.

Q. The San Diego didn't address the issue of whether a person is impaired by a drug?

A. Well, I consider alcohol a drug.

Q. Other than alcohol?

A. No. It dealt with alcohol.

Q. What scientific mathematical formula do scientists use to calculate the probability that when a person has HGN, the person is impaired by a drug?

A. The same answer. Is they use sensitivity, KHI square analysis and they will calculate the sensitivity and specificity, very

specific formulas that will give you the probability.

Q. And can you point me to an article that says that?

A. That's in statistics, basic statistics.

Q. I know it's based in statistics, but can you point to me an article, a scientific peer-reviewed article that stands for that proposition?

A. The proposition -- it's a technique, that's a procedure that is used to assess analysis of data. That's what you're asking is statistic --

Q. I'm asking you who used it and where was it published.

A. Right here in the article that you just gave me.

Q. No, they don't deal with drugs other than alcohol.

A. Oh, okay, the Heishman study, and if you want to deal specifically with drugs, off the top of my head, the John Hopkins studies, they did similar things to look at the probabilities.

Q. Have you ever applied that mathematical

formula to the Standardized Field Sobriety Test?
A. Yes, I did.
Q. And where would I find that?
A. In my own article, In the Competency and Accuracy of Recruits and Use of HGN, I did the same thing. I think it's in the pile here somewhere. I don't know which one it is.
Q. What scientific formula do you use to convert the degree of correlation of HGN to the probability that a person's driving is impaired?
A. I don't. It's not necessary. I can create BAC level to driving impairment. There are many, many articles that have clearly established the blood alcohol levels to driving impairment.
Q. We're talking about drugs now.
A. And drugs as well. I gave you a reference in psychomotoring in my deposition. That's another series.
You also gave me other articles here that dealt with many of the drugs: Meprobamate, Valium, GHB.
Standard correlations are done, and probability studies and basic statistics are

supplied.

Q. You told me that your scientific opinions in this case depend on the published scientific literature relating to the standardized field sobriety testing and the drug recognition expert testing, correct?

A. Yeah. Is that what I said in my deposition?

Q. Yeah.

A. If I said that, then if that is accurate, then I did.

Q. You form your opinions based on real peer-review literature published in actual scientific journals?

A. I base my opinion on the scientific literature that is available, that includes peer reviewed journals, that includes scientific reports that are published by Federal agencies, such as National Highway Transportation Safety Administration, as well as the National Institutes of Health.

Q. But they are not peer-reviewed. Those are government publications?

A. They are peer-reviewed internally by a

qualified panel.

Q. They are not sent out to scientists?

A. They are internally.

Q. Internally by members of your board, but not to scientists outside --

A. They are. I know the process, counselor. The way it will work is they have -- they are required in their protocols to have visitation teams, when they are doing research at their sites, whenever there's a Federal grant that they are complying with the protocols, when the information comes back and their final conclusions, they are required -- these are reviewed by a separate panel of scientists who are part of NHTSA before that goes out.

Q. Part of the NHTSA. Now, who was on the scientific panel that reviewed the San Diego report?

A. I'm not familiar with the people from NHTSA that do that.

Q. Does it indicate in here --

A. No. But it indicates there was a grant. And the grant, before it's done and the many final report goes out, it's reviewed by numerous

people. You saw Dr. Richard Compton and he has his entire staff of statisticians and researchers that have to review it for accuracy and conclusions.

In fact, GSA requires that eventually within a two-year period, most articles need to be also published.

But I know personally first person that these are looked at. It's not just automatically just sent out.

Q. On Page 14 of your report, you indicate: "In terms of HGN being a valid and reliable predictor of impairment in blood alcohol, there were again various consistent and repeatable studies all supporting the correlation of alcohol and HGN. These studies determined that the HGN and the other two Standardized Field Sobriety Tests, (the Walk-and-Turn, One Leg Stand) reliably enabled officers: To detect central nervous system impairment due to alcohol as well as drugs."

Leaving aside the issue of alcohol, can you point to me the peer-reviewed scientific research that indicated that the Standardized

Field Sobriety Tests reliably enabled officers to detect central nervous system impairment due to drugs?

A. Other than the field sobriety test, is that your question?

Q. I'm asking you if you can tell me the peer-reviewed scientific articles that support that conclusion.

A. Which conclusion?

Q. These studies -- these studies determined that the HGN and the other two field sobriety tests reliably enabled officers to detect central nervous system impairment due to drugs?

A. Yes, I gave you the four. I said John Hopkins was an example of the studies.

Q. Anything else?

A. Not off the top of my head.

Q. So this John Hopkins study, and when did -- who authored this John Hopkins study?

A. I said earlier it was Heishman and others. I can produce a much greater bibliography. It was not what I had been anticipated that I would need to do. My opinion is based upon review of a great deal of

literature and not to a produce an extensive bibliography.

Q. Reference to the studies relied on from my opinion in this regard is as follows:

A. Those are the primary ones.

Q. And you list three in your report. This is your report?

A. That's correct.

Q. It's the Colorado study?

A. Those were the primary ones.

Q. The Colorado study, is that correct?

A. Yes.

Q. The Florida study?

A. Yes.

Q. And San Diego study?

A. Yes.

Q. None of which even tested the reliability of the field sobriety test to detect central nervous system impairment, correct?

A. No. They detected central nervous system impairment.

Q. Due to drugs other than alcohol?

A. No. Alcohol.

Q. And let me ask you again: Where does it

say in those studies "impaired" as posed to accurately predicting blood alcohol levels?

A. The word "impairment" is not used.

Q. Thank you.

A. The presence of nystagmus is a direct indicator of impairment, in my opinion.

Q. Opinion 7 of yours that in your opinion to a reasonable degree of professional certainty that more likely than not Ms. Sukoc was impaired by a very short acting compound which was exhibited in the Standardized Field Sobriety Test evaluations performed and reported by Trooper Carlson and Officer Plunkett," that's your opinion, correct?

A. That's a probability, yes.

Q. Is it -- what very short acting compound are you talking about?

A. Ativan could be one. There's another --

Q. What's the name of it?

A. Just a moment. There are several very short acting benzodiazepines -- and right now, I'm drawing a blank. Is that okay? I did not specify.

Q. You had an opportunity to put all of this

in your expert opinion report when you weren't sitting here for three and a half hours, I understand that.

A. What I did was identified a class. There are a class of very short acting central nervous system depressants that have duration of times that will last from one to three hours and they are half-life of leaving the system can be anywhere from two to our hours.

Q. What are there?

A. I can look it up in the PDR.

Q. You have a theory. I would just like to confirm your theory.

THE WITNESS: Do we have internet access here?

MR. PATANE: We have a PDR.

Q. There you go. Have a look at it.

A. (Witness complies.)

It only lists the most common ones out there. That's why I can't use this book. I can provide a list if you want.

Q. So sitting here today after you have had an opportunity to review all of the evidence and prepare an expert report in this case, you can't

name a single very short acting compound which was exhibited in the Standardized Field Sobriety Test performed by the two officers?

A. One -- let me look at Ativan because I didn't limit it to short acting. I said it could be other drugs as well.

Q. You said very short acting compound?

A. Compound.

Q. That's what I said.

A. I did not say specifically a tranquilizer. It can be any compound or a substance. Let me see if I can find it here. I'm sorry. I could do it if I looked it up on --

Q. Did you look it up when you wrote your report?

A. I have notes on it on home, yes.

Q. Will you provide those notes to me?

A. I will.

MR. PATANE: Objection. We'll take it under advisement, but you don't get to see the doctor's file. He can provide a list, if he wants, of the ones that he was referring to.

Q. Doctor, there's a disagreement about whether you have to provide your entire file to

me. Will you agree today not to destroy anything in your file?

A. Yes.

Q. So if a court orders it produced in the future, nothing will be taken from it?

A. That's correct.

Q. Since you don't know and cannot name the compound you're talking about, you can't tell me whether any peer-reviewed scientific research has confirmed that the Standardized Field Sobriety Test evaluations performed by the two officers would indicate impairment of this unknown drug, correct?

MR. PATANE: Objection.

A. No, I can't say that. Because there are studies on various central nervous system depressants that will affect the signs that they saw on the field sobriety test.

Q. Name one.

A. That's what I'm attempting to do, sir.

Q. Name a -- if we don't know the name of the drug, we can't name peer-reviewed scientific research that would back up your opinion that the field sobriety test would approve impairment,

correct?

A. No. You gave me articles that dealt specifically with benzodiazepines as it relates to creating signs and symptoms, GHB. Now benzodiazepines are that category I'm talking about.

Q. We are talking about the field sobriety test.

A. That's correct. HGN is part of that.

Q. But not the Walk-and-Turn and One Leg Stand?

A. Yes.

Q. Well, you will get me those articles, won't you?

A. How many articles are we talking about and in what categories? If I can make a note of exactly what you want --

Q. I want an article that substantiates this Opinion No. 7.

A. Fine. Right it down.

MR. PATANE: It will be in the transcript.

Q. Since you told me you don't know what the Vermont -- what Vermont law prohibits with

regards to drugs and driving, it's impossible for you to tell me whether the officer had probable cause to believe that a crime was committed?

MR. PATANE: Objection.

A. No, I don't agree.

Q. So you can reach that conclusion without even knowing what the law prohibits?

MR. PATANE: Objection.

A. I know that the purpose of Standardized Field Sobriety Tests nationwide are to detect an operator who is potentially impaired.

Q. You say "Trooper Carlson asked Ms. Sukoc to exit her vehicle and asked her to twice to close the car door and then he shut it for her," do you see that on Page 4?

A. Yes, I believe I was reading from his record.

Q. This is Exhibit 7. This is Trooper Carlson's report. Could you read the highlighted portion of that for the record?

A. "When she stepped from her vehicle, I asked her to shut the door. I had to repeat myself twice before she did so."

Q. Who shut the door?

A. I guess he did -- she did.
Q. Did you review the videotape?
A. Yes, I did.
Q. And you saw the Walk-and-Turn test?
A. Yes.
Q. What is the correct number -- what are officers taught regarding the Walk-and-Turn test. Specifically the number of steps a person takes?
A. Nine.
Q. Did you count the number of steps that Ms. Sukoc took?
A. Going one direction, yes. I think I did both directions, yes.
Q. She took nine steps in each direction?
A. I don't recall exactly. I believe I watched it. I watched more of his directions to her. I watched her balance. I watched the errors that she took. I believe there were nine, but I would have to look at again.
Q. Nine each way?
A. Yeah, I'm not sure.
Q. Do you want to take a look with me?
A. No. I mean, that was my recollection. If you want to look at it, I will be glad to.

Q. If she took nine steps each way, she took the correct number of steps?
A. Yes.
Q. But Trooper Carlson reports that she took the incorrect number of steps?
A. Well, that could be additional steps that he may have seen.
Q. Well, is there something on the videotape that he saw that we wouldn't have?
A. I don't recall.
Q. Now, in your report you indicate that you could not confirm that the instructions that Trooper Carlson gave to her?
A. No, I couldn't.
Q. You couldn't confirm that she started before instructed and you couldn't confirm she did not touch heal to toe?
A. Because I couldn't see that clearly.
Q. The only clue that you picked up on the Walk-and-Turn was that she may have lost balance?
A. That was more obvious. Seeing the number of steps is much more difficult because they could be small.
Q. But one out of that is not -- you can't

call it, right?

A. No.

Q. The HGN was done, it was inconsistent with his training because he had her looking into traffic and the wig-wags were on, correct?

A. I believe that was correct.

Q. The Field Sobriety Testing Student Manual indicates that: "It is necessary to emphasize that this validation applies only when the tests are administered in the prescribed standardized manner, and if that any one of the Standardized Field Sobriety Test elements is changed, the validity is compromised."

Did I read that correctly?

A. Yes. That's out of the manual, that's correct. It does not mean that the information cannot be used. This goes to the robustness of all the data that's collected.

Q. Did you have a chance to review Officer Plunkett's DRE evaluations?

A. Yes.

Q. And you would agree with me that in each case, and there are six of them, reported by Officer Plunkett, when either he was not told

that a particular drug was being used, or there was no evidence that a particular drug was being used, and he predicted that the drug would be found in the person's blood, he was wrong?

MR. PATANE: Objection.

A. No, that's not correct.

Q. Okay.

A. He's drawing a category based on the signs and symptoms. It does not have to be supported completely by toxicology, and that's part of the DRE standards.

Q. I thought it was 90 percent accurate in telling which drugs were being used?

A. That's not correct. It depends on the category. And there's large categories in that we have seven different categories of drugs.

Q. So in Casey Sears, for example, he predicted, based on his evaluation of Casey Sears that --

A. Who is Casey Sears?

Q. It was one of his --

MR. PATANE: For the record, the witness is not looking at the log. Counsel is looking at the documents.

A. Is that his log? I don't know what he's looking at.

Q. You said that you went over these?

A. You asked me if I went over his report.

Q. In Casey Sears' situation, Officer Plunkett predicted, based on his drug expert evaluation, a drug recognition evaluation, that he was under the influence of a narcotic drug and cannabis, and when the toxicology results came back, there were no narcotics?

A. Okay.

Q. Dillon Wetzel, Officer Plunkett predicted that Mr. Wetzel was under the influence inhalants, depressants and cannabis and no cannabis was found in his toxicology results?

A. And the reason for this is very specific, in the training that they have, in the manual, you have, they are taught that there can be overlapping effects, various drug categories can give very similar signs. So many times what they have is what is considered polydrug use and an officer is trained to predict or make an opinion that I believe they are under polydrug use and it may not be all the drugs that are there because

that is not the purpose of the DRE evaluation. The purpose of the DRE evaluation is to make the decision that there is a -- they're impaired due to a drug and potentially which categories.

So if they don't have it in all three categories, and have it in one, that's still a fact that was supported by toxicology. So those are accurate.

Q. In David Fornier's case, Officer Plunkett, based on his drug recognition evaluation, predicted or opined that Mr. Fornier was under the influence of cannabis, depressants and alcohol.

A. And the question?

Q. The toxicology results were CNS depressant, cannabis and narcotic, he missed out on the narcotics and he missed out on the alcohol.

A. He didn't miss on the alcohol. You have to look at the report in which he did, there may have been a PBT or a breath test that indicated alcohol. Alcohol is checked for in the very beginning. So he had two out of three categories in that specific one, which is a very good

outcome on a polydrug use.

Q. In Dustin Spencer's case he predicted cannabis and there was no drugs found in Mr. Spencer's blood. That's a single drug.

A. Okay. And that was his call. He found him impaired. And there's a very clear reason why Cannabis will not be found in many blood samples. And the reason is twofold: One is the time in which the blood is taken. If the blood is taken several hours later, and the way Cannabis works, the blood level and threshold for testing may be too low that detected in blood even though the psychoactive components are quite present and the individual be impaired, and there's a great deal of research to support that presently.

So that because it was not blood does not necessarily mean that the individual was not under the influence of Cannabis.

Q. In Ryan Maxwell's case, he predicted CNS stimulant in narcotic and the toxicology report came back to marijuana?

A. And the reason for this they can mimic and overlap. He felt that the individual was

impaired. He did not get the correct categories. We do not go -- on the DRE evaluations are not necessarily based totally on the support of the toxicology for a specific drug. Many drugs will not be tested or there's threshold drugs that are -- the threshold and the drug by the time it is taken is below the threshold that NMS Labs will have done. And that's not an uncommon problem that we're seeing. Cannabis is a very characteristic one when blood is drawn.

Q. In Mrs. Sukoc's case, Detective Plunkett predicted that she was under the influence of a depressant drug and no drugs were found, correct?

A. Based on toxicology. In my opinion, I feel that she clearly supported that she was impaired because we had repeatability of Trooper Carlson and Officer Plunkett's evaluation which is a basic very strong test for reliability that she was impaired.

Q. When you say "impaired," impaired means they got worse, they had a baseline and they were impaired from that baseline, correct?

A. They were -- showed signs of impairment that could clearly affect operating a motor

vehicle, and that impairment are deviations of a loss or inability of various functions as evidenced by the field sobriety tests, the horizontal gaze nystagmus test, plus all the factors that are done and taken in the DRE evaluation.

Q. How does one make the call? What is the scientific standard for making that call?

A. The scientific standard?

Q. Yes, for making the call. I mean, you're saying that a person is under the influence of a particular drug or any drug at all, what is the scientific standard, sir?

A. The standard is if they exhibit a whole pattern of signs. The standard is that we have over the years collected the information, and what we find is that based on over 100 indicators that an individual shows during this evaluation, the officer is making an opinion the person is impaired. It's not their job to make a diagnosis. It's not their job to make a definitive decision of which drug it was. They can only speculate on a category and that it's not due a medical condition because they are

attempting to rule this out.

Q. How can a nonphysician rule out a medical condition?

A. Because they do it by signs and symptoms and seeing the individual. They are not ruling out a medical condition. In fact, approximately one out of ten DRE evaluations wind up as a medical problem, which is a public safety value that they wind up saving the individual by sending them to a hospital or protecting them from any further testing that was required because what they are looking for is an impairment and the job to get them off the road that particular evening.

Q. If there are no standards, how can anything be validated scientifically?

A. Because they have been. We validated the FSFTs and every part of the protocols that we used to test that we use, including the one leg stand, finger to nose, modified Romberg, we know that these people that in those tests, they have deviated from what a normal non-impaired individual is going to do. And we have put that into a format that helps an officer to say,

"Look, there's a great probability that this person is impaired due to some substance or some drug. We don't know what that is. That's not our job to do."

The job of a police officer is to make an opinion that someone is impaired. It's not a medical diagnosis. And I would tenure to not get into the issue of accuracy of medical diagnosis versus the accuracy of DREs. DRE's accuracy in making a judgment of drugs is much more accurate than medical diagnosis and that's well documented.

Q. In your opinion was Ms. Sukoc disoriented?

A. I was not there to see that.

Q. You heard her on the film?

A. Mildly. But I heard the slurred speech a bit.

Q. She's got a thick foreign accent. You think her speech was slurred?

A. Are we debating my opinion?

Q. Do you really think that?

A. I don't know her. I can only make an opinion on the limited information that I have.

Q. Right. And my question to you is: Do you really believe that Fata Sukoc's speech that night was slurred?
A. From what I heard, I could not determine whether it was an accent or slurred.
Q. Did she exhibit drunk-like behavior?
A. Yes.
Q. Drowsiness?
A. Possibly, yes.
Q. Drooping eyes?
A. I couldn't see her eyes.
Q. Fumbling?
A. I could not see her fumbling.
I have to go on the reports of two different officers, and specifically the drug evaluation report that looked at very specific measures and I found them reliable.
Q. According to your drug matrix that you at TAP developed --
A. Let me clarify. I didn't develop it and TAP didn't develop it. Please.
Q. Who put the matrix together?
A. That was developed over time from --
Q. By who?

A. LAPD.
Q. Who else?
A. And then people in the beginning there were physicians involved, psychologists, neurologists. This came from LAPD in its original inception.
Q. And it was two Los Angeles police officers that started this?
A. They started it.
Q. It was accepted in the field in LA without any scientific testing, correct?
A. That's not true.
Q. And it was accepted by NHTSA before the scientific tests that we talked about, the validation studies?
A. Well, they did the validation studies.
Q. After NHTSA accepted this in 1982?
A. That's correct. However --
Q. The first validation study was 1984?
A. However -- okay.
Q. And you at TAP adopted this DRE symptomatology matrix for the use of drug recognition experts? It's in your book.
A. Excuse me. If you look at it carefully

there's modified exceptions. We constantly keep checking on whether those signs keep changing because every year there's new drugs that fall into multiple categories, multiple categories which make it even more difficult. There are new drugs out there that will fall into three categories. So when an officer tries to make that and the drug comes back as a different category. If you look under depressants, it will say specifically an exception that antidepressants can have stimulant characteristics. So these are constant things that we keep modifying.

Q. And the officers in the field are supposed to know this?

A. Yes. They are given updates on a regular basis. They are required for recertification and by their state coordinator to be provided these things. And we have a high level of control on this. And we do decertify DREs every year who do not comply with this.

Q. In your opinion was Ms. Sukoc on Quaaludes?

A. No, I cannot make that judgment.

Q. Alcohol?
A. I have no idea.
Q. Well, you saw the triple zeros on the Alco-Sensor?
A. That's fine. She was not using alcohol.
Q. Psychedelic Quaaludes, in your opinion, was she using those?
A. I don't know.
Q. Anesthetic gases?
A. It's quiet possible she might've.
Q. Where would a person get an anesthetic gas?
A. Where she worked.
Q. At the nursing home?
A. You can go to Walmart and Home Goods -- I'm sorry, Home Depot and buy anesthetic gases.
Q. Such as what?
A. I can buy whippets, they are used for making whipped cream, nitrous oxide.
Q. Nitrous oxide does not cause HGN?
A. Oh, yes, it does, sir. Absolutely, it does.
Q. What study are you relying on in that one?

A. How about 40 years of experience with it, plus studies of nitrous oxide as an inhalant will create --

Q. You think she was doing whippets on her way home from work?

A. I have no idea what she was doing.

Q. You have to have a theory. Where did she get the whippet?

A. I don't know.

Q. What was a whippet in the car?

A. No.

Q. Did you see any evidence that there was any kind --

A. No, I only see evidence that she was impaired.

Q. May I finish my question?

A. Sure. You don't let me.

Q. In the car, did the officer see any evidence of drug use?

A. Not reported.

Q. Did they get a drug dog?

A. No, not reported.

Q. There was a conversation about getting one, wasn't there?

A. Yes.
Q. You heard it?
A. Yes.
Q. They decided that it wasn't necessary?
A. Yes.
Q. Were any drugs found in Mrs. Sukoc's purse?
A. No.
Q. In her jacket?
A. Nope.
Q. In her pocket?
A. Nope.
Q. In her glove compartment?
A. Nope.
Q. In her trunk?
A. No.
Q. Did she use drug-related slang when she talked to the police officers?
A. No.
Q. Did she admit to the use of the drugs?
A. No. Now may I speak?
Q. I'm here to ask the questions. You can give your speeches to a different audience.
If she was using CNS depressants, her

reaction to light would have been what?
A. Whatever is reported. I believe the DRE reported her reaction to light.
Q. And what did he report?
A. I don't have that report in front of me at this moment.
Q. Do you know what her pupil size was?
A. I believe her pupil sizes were in the average range.
Q. What about vertical gaze nystagmus?
A. I don't recall without looking at his report.
Q. And according to the drug matrix that's included in your book, vertical gaze nystagmus would have been present in a high dose?
A. A high dose of?
Q. For that particular individual?
A. Yes, for that particular individual. The drug matrix is a guideline for police officers. It's not an absolute. It's similar to a cheat sheet to help them guide and help make a decision.
Q. This is a cheat sheet?
A. To a large --

Q. That's what you just referred to this as?
A. That's correct, sir. It's a way as part of the training of the entire program that they refer to. They do not make their decision on the matrix alone. There's only a certain number of categories and clues on here. When they are doing the full evaluation and when you look at the face sheet, there's 100, over 100 indicators in the history, in the divided attention tasks that are not on the matrix.

When the DRE makes their final conclusion of impairment and what category, they are not just relying on the matrix, they are looking at all the clues and the totality of the clues.

Q. So it's a subjective, not an objective decision?

A. That's true of the entire field. Here as an opinion and, in fact, it's the entire field of psychiatry. There are no biomedical tests for psychiatry. It's all behavior. And that's again if we're talking about that kind've of thing.

MR. WILLIAMS: Any questions, Mark?

MR. PATANE: Maybe one or two.

CROSS EXAMINATION BY MR. PATANE:

Q. Doctor, on a number of occasions you weren't allowed to finish your answers. Is there anything you would like to clarify or describe about your prior testimony that you didn't have a chance to?

A. I need to -- if I can understand the way field sobriety is done and the purpose of it and the DRE evaluation and its purpose. It's to form an opinion based on what is observed of whether is someone is impaired. These tests have been validated to give clues that someone is potentially impaired and should not be operating a vehicle.

At that point, they would be potentially arrested and go through an entire process to find out whether or not there is a reason to suspect that they are still under a drug and what potential category.

In my own personal experience in looking at a great deal of the data from these evaluations, many individuals are clearly impaired and also there's a percentage of individuals that have impairment, medical impairment that is not due to a drug and an

appropriate actions are taken by the police to help that individual. I think that there's a robustness to these things and this is not a medical diagnosis. This is not a medical model that should be applied in this case for the DRE protocol.

And the last thing, I'm not here to defend the Drug Recognition Expert Program in its validity in scientific. I am reporting what I saw in a particular case, what was done by a specific trooper in making a decision about an arrest and the follow-up by a drug recognition expert and what that opinion was, that the individual was impaired.

So, with that, I have nothing else to say.

Q. The fact that you weren't able to see a number of steps or other things on the videotape when you viewed it, does that mean that other people who also viewed it were not able to see things that you could not -- didn't see?

A. No. I may have missed certain pieces, but I looked at the totality of what I saw, and the totality of all the information that was

gathered by Trooper Carlson, the sequence of what he did, also the follow-up by Officer Plunkett and his evaluation. And in my opinion, they were consistent that they clearly found an individual that was impaired. And that there's questions as to what was the cause of that impairment. I'm still not sure what it was, but I believe their decisions were based on their training and they were accurate decisions.

Q. What importance, if any, do you put on the fact that Trooper Carlson and Trooper Dunning who were by there at scene and observed Mrs. Sukoc and then yourself and Sergeant Roy who viewed the videotape and reviewed the reports afterwards that all four of you agree that Trooper Carlson had probable cause to arrest Mrs. Sukoc that evening for suspicion of impairment?

A. I clearly, as I stated earlier, feel that there was a proper sequence, in fact, more evidence that is often provided in many cases of arrests for probable cause or driving under the influence be it alcohol or drugs, and in this case, we had two additional observers, one, a

drug recognition expert that not only repeated more extensive tests, but validated the observations of the sobriety test, specifically horizontal gaze nystagmus, Walk and Turn, One Leg Stand, that supported the probable cause for the arrest.

MR. PATANE: That's it.

MR. WILLIAMS: Thank you, Doctor.

(Whereupon, the deposition was concluded at ^ p.m.)

ATTACH TO DEPOSITION OF: JACK E. RICHMAN, OD, FAAO, FCOVD

CASE: FATA SUKOC v. TIMOTHY CARLSON

DATE: December 18, 2013

ERRATA SHEET

INSTRUCTIONS: After reading the transcript of your deposition, note any change or correction to your testimony and the reason therefor on this sheet. DO NOT make any marks or notations on the transcript volume itself. Sign and date this errata sheet (before a Notary Public, if required).

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I have read the foregoing transcript of my testimony, and except for any corrections or changes noted above, I hereby subscribe to the transcript as an accurate record of the statements made by me.

_____
JACK E. RICHMAN, OD, FAAO, FCOVD

CERTIFICATE

Commonwealth of Massachusetts

Norfolk, scientific standards.

I, Jill M. Kourafas, a Notary Public in and for the Commonwealth of Massachusetts, do hereby certify:

That JACK E. RICHMAN, OD, FAAO, FCOVD, the witness whose deposition is hereinbefore set forth, was duly sworn by me and that such deposition is a true record of the testimony given by the said witness.

IN WITNESS WHEREOF, I have hereunto set my hand this 5th day of January 2014.

Jill Kourafas
Notary Public
Certified Shorthand Reporter
License No. 149308

My Commission expires:
February 2, 2017

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