Theory and Attack of the HGN

Joe Suhre

What is HGN

- Stands for Horizontal Gaze Nystagmus
- According to NHTSA:
 - Nystagmus is the involuntary jerking of the eyes. Alcohol and certain other drugs cause Horizontal Gaze Nystagmus

- Three phases, six clues
 - LOSP: Lack of Smooth Pursuit
 - DSMD: Distinct and Sustained at Maximum Deviation
 - OP45: Onset Prior to 45 degrees

- Pre-screen: equal pupil size, resting nystagmus, equal tracking
- Remove eye glasses
- Provide verbal instructions:
 - I am going to check your eyes
 - Keep your head still and follow the stimulus with your eyes
 - Keep following the stimulus with your eyes until I tell you to stop

- Proper stimulus position
 - 12-15" from the face
 - Slightly above eye level
 - You will need a 'contrasting stimulus' The stimulus can be tip of index finger, penlight, or pen
- After checking for equal tracking, begin the test

- Lack of Smooth Pursuit
 - Move stimulus at a rate that takes approximately two seconds to take the eye to the side as far as it can go. Move the stimulus back across the suspect's face and check the other eye
 - Rate should be two seconds out, two seconds back
 - Start with the suspects left eye, then the right eye, then repeat

- Distinct and Sustained Nystagmus at Maximum Deviation
 - Move stimulus to take the eye to the side as far as it can go. Hold for at least 4 seconds, not more than 30.
 Move the stimulus back across the suspect's face and check the other eye.
 - There is no prescribed rate of movement, only 'holding time'
 - Start with the suspects left eye, then the right eye, then repeat

- Onset Prior to 45 Degrees
 - Move stimulus to 45 degrees from the suspects nose a line parallel to the shoulder. If nystagmus is observed prior to 45 degrees, stop and confirm that there is still white showing on the side closest to the ear.
 - Move the stimulus back across the suspect's face and check the other eye.
 - There is no prescribed rate of holding time, only 'moving time'.
 - Start with the suspects left eye, then the right eye, then repeat.

- Vertical Gaze Nystagmus
 - Move stimulus vertically to elevate the suspects eyes as far as possible.
 - Hold for approximately 4 seconds
 - There is no prescribed rate of moving time, only 'holding time'
 - Repeat. Does not tell you to look at each eye separately.
 - Observed clue indicates 'high doses of alcohol' and 'certain other drugs'

Interpreting the HGN

- According to NHTSA
 - 4 or more clues = 77% likelihood BAC is above 0.10 (per 2006 manual) That then magically changed to 0.08.
 - A clue is the observation of either LOSP, nystagmus at maximum deviation, prior to 45 degrees.
 - There are two clues per phase one for each eye

Theory of HGN

- NHTSA tells us that nystagmus occurs when there is an unequal concentration of a foreign fluid (such as alcohol) in the blood and vestibular system.
- What it isn't:
 - balance test
 - coordination test
 - mental process test

Theory of HGN

- Roots of the test are in Laboratory Science and Clinical Medicine
- Is it a scientific test?
 - If it is, then what? Rule 702 applies
 - If not, then can 701 be used to admit testimony?

701 & 702

- Rule 701 Opinion testimony by lay witnesses
- If the witness is not testifying as an expert, the witness' testimony in the form of opinions or inferences is limited to those opinions or inferences which are:
 - (a) Rationally based on the perception of the witness;
 - (b) Helpful to a clear understanding of the witness' testimony or the determination of a fact in issue; and
 - (c) Not based on scientific, technical, or other specialized knowledge within the scope of Rule 702.



701 & 702

- Rule 702 Testimony by experts
- If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if:
 - (1) The testimony is based upon sufficient facts or data;
 - (2) The testimony is the product of reliable principles and methods; and
 - (3) The witness has applied the principles and methods reliably to the facts of the case.



- File a Motion in Limine
 - Hardin v. Comm says:
 - absent satisfying 702, officer can only testify as to lay opinion observations



- Cannot say "pass" or "fail"
- Cannot say "clues" or "points"
- Why? Because it enhances the significance of the observations of a lay person to that of science
- Restricted to lay observations of impairment



- If you can't call it a test
- You can't say it was passed or failed
- You can't correlate eye twitching to impairment or even alcohol consumption
- The results are irrelevant



 If the prosecutor can't call it a test, can't have the officer testify as to the clues he observed, can't use it to correlate impairment, can't use it to establish a BA then what good is it?



- Kentucky has adopted the Daubert Standard
 - Mitchell v. Comm.
 - Standard embodied in KRE 702



Rule 702 Testimony by experts

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if:

- (1) The testimony is based upon sufficient facts or data;
- (2) The testimony is the product of reliable principles and methods; and
- (3) The witness has applied the principles and methods reliably to the facts of the case.

- Qualified Witness
 - knowledge
 - skill
 - experience
 - training
 - education



- First challenge for prosecutor is to qualify their officer as 'an expert'
 - not easy to do if you challenge them
 - its not just that they know how to do it
 - a technician is not necessarily an expert



- But that's a start:
 - challenge their training
 - request their training records



SUHRE & ASSOCIATES, LLC

ATTORNEYS AT LAW

March 8, 2016

Brandi Robinson Justice & Public Safety Cabinet 521 Lancaster Avenue Richmond, KY 40475-3102

VIA EMAIL

Re: Records Request Case Number: 16-T-02012 (Kenton) My File No.: 7627

Dear Ms. Robinson,

Pursuant to the Kentucky Open Records Act, KRS 61.870 to KRS 61.884, I am requesting *certified* copies of the following items:

- The Kentucky Justice Cabinet Department of Criminal Justice Training's record of training for the officer(s) identified below.
- 2) The training materials used to train the officer(s) including, but not limited to, the DUI/Standard Field Sobriety Test Course Reference Guide. I am requesting the specific materials that were used by the officer(s) identified in their training, not the current manual unless of course, the two are the same.
- 3) Officer: D. Griswold, badge number 0240, of the Covington Police Department

Please mail the original "Certification of Copies of Official Governmental Records" to my office, as this certification will be used as evidence and I will need to admit the original certification as an exhibit. The records can be emailed to jsuhre@suhrelaw.com.

My office is located outside the county where these records are kept and accordingly, I am requesting that you mail or email copies to my office. If prepayment is required, please advise me of the amount and payment will be tendered. If pre-payment is not required, please include an invoice for all copying and postage charges, which we will gladly pay. If you have any questions, please contact me at the numbers below.

Sincerely,



cc: file

Phone: 513-333-0014 Fax: 513-333-0032 www.suhrelaw.com 600 Vine Street, Suite 1004 Cincinnati, OH 45202

- 1) The Kentucky Justice Cabinet Department of Criminal Justice Training's record of training for the officer(s) identified below.
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Joseph	Joseph Suhre, Suhre & Associates						
Address:							
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Street/P. O. Box	City	State	Zip Code				
	 DUI Investigation Financial 	eld Notes updated	January 2012				
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The copies of the foregoing identifie are true and complete reproductions are housed in the <i>Department of Crim</i>	• DWI Motorists Brock ed agency records for which s of the original or microf <i>ninal Justice Training</i> .	hure th this certificat ilmed original	tion is made records that				

State of Kentucky	
County of Madison	
Subscribed and sworn to and acknowledged before m	e this 20th day of January,
20 16.	Jan O Sector
My commission expires: Aug. 29, 2016	Notary Public, State at Large



Challenge the Officer's Administration

- Pre-screen instructions, equal tracking, equal pupil size, resting nystagmus
- Stimulus distance
- Timing on LOSP
- Timing and placement on Maximum Deviation
- Angle Estimation and Timing on Onset Prior

Rule 702 Testimony by experts

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if:

- (1) The testimony is based upon sufficient facts or data;
- (2) The testimony is the product of reliable principles and methods; and
- (3) The witness has applied the principles and methods reliably to the facts of the case.

Where are we at?

- 701 says lay opinion. If that's the case, then HGN is irrelevant because there's no correlation between jerking eyes and impairment.
- 702 says expert opinion. Challenge the qualifications of the officer (not a mere technician) as well as the way the officer administered the HGN.

- 702 Challenge based on:
 - sufficient facts and data
 - reliable principles and methods

- Advantages of this type of challenge:
 - cost
- Disadvantage
 - no contrasting testimony

Case Study

- Cincinnati family
- Daughter getting married in Louisville
- Went to see the church, reception hall, and had dinner at Mitchell's Seafood to meet the grooms parents
- Headed back to Cincinnati on I-71

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- Confirmed what I was seeing in the report:
 - Speeding was PC for stop (87/70)
 - No fumbling/not confused
 - No slurred speech
 - Odor was strong

- There are no other field notes/reports besides the Uniform Citation
- No video
- SFSTs
 - No clues on the One Leg Stand

- SFSTs
 - Walk and Turn
 - Used Arms for Balance
 - Missed Heel to Toe
 - Stepped off the line

- SFSTs
 - HGN
 - No clue observed for Lack of Smooth Pursuit
 - Observed Distinct and Sustained Nystagmus at Maximum Deviation
 - Observed Onset Prior to 45 degrees

Motions Were Filed and Hearings Were Held

• Filed a Motion in Limine to exclude the HGN

- hearing was set for 2/13/14
- prior to the hearing, I was not provided with the experts reports and or articles he intended to rely on in giving his opinion

Rule 701 Opinion testimony by lay witnesses

If the witness is not testifying as an expert, the witness' testimony in the form of opinions or inferences is limited to those opinions or inferences which are:

- (a) Rationally based on the perception of the witness;
- (b) Helpful to a clear understanding of the witness' testimony or the determination of a fact in issue; and
- (c) Not based on scientific, technical, or other specialized knowledge within the scope of Rule 702.

• The HGN is a scientific test

 The opinion of intoxication is not rationally based on perceiving a 'bouncing eye'

Motions Were Filed and Hearings Were Held

- Day of Hearing the prosecutor provides a stack of articles.
- Never provided a summary of his expected testimony
- 7.24(1)(c) upon written request by the defense, the attorney for the Commonwealth shall furnish to the defendant a written summary of any expert testimony that the Commonwealth intends to introduce at trial. This summary must identify the witness and describe the witness's opinions, the bases and reasons for those opinions, and the witness's qualifications.

KARL CITEK, O.D., Ph.D., FAAO P.O. Box 432 Forest Grove, Oregon 97116 Office: vox (503) 352-2126 fax (503) 352-2929 citekk1@pacificu.edu

CURRICULUM VITAE

EDUCATION

SUNY College of Optometry Ph.D. in Vision Science, May 1995. SUNY College of Optometry O.D., December 1993. SUNY College of Optometry M.S. in Vision Science, June 1990. Columbia University B.A. in Physics, May 1984.

PROFESSIONAL AND WORK EXPERIENCE

Institute of Police Technology and Management, University of North Florida Adjunct Faculty, 2003-present. Instructor, Medical Foundations of Visual System Testing. Pacific University College of Optometry Professor, 2006-present; Associate Professor, 2000-2006; Assistant Professor, 1994-2000. Instructor, Physiological Optics; Ophthalmic Optics; Visual Perception; Environmental Vision. Attending Doctor, Primary Care and Low Vision Clinics. Research Coordinator, Pacific/Nike Research Program. SUNY College of Optometry Research Assistant, 1987-1994, for Dr. Sheldon M. Ebenholtz. Teaching Assistant, 1987-1991, 1994, Geometrical Optics. Laboratory Assistant, 1988-1989, Ocular Anatomy and Physiology. Research Assistant, 1984-1987, for Dr. Milton Katz.

PROFESSIONAL LICENSES (OPTOMETRY)

Oregon (AT), New York (DPA).

- Optometrist
- Has taught/lectured at many DUI/DRE seminars almost all of which are police/prosecution centric
- Testified "well over two hundred times" for the prosecution and 3 times for the defense those three times were on improper administration and/or medical disqualification.

Keep in mind that the HGN test is a screening test, it is not going to be proof -- proof positive of intoxication or sobriety.

If someone has gaze nystagmus, that onset prior to 45, without the earlier clues being present, then I would attribute that as a medical or neurological condition.

20	So someone could have lack of smooth
21	pursuit naturally when sober. Someone could have
22	gaze nystagmus naturally, someone could have
23	vertical gaze nystagmus naturally, but if they have
24	it in isolation without any of the other clues, and
25	certainly without any other indicators that would be
1	consistent with intoxication, then the officer will
2	rightfully not conclude that the suspect is impaired
3	because of intoxication. There could be something
4	else causing the impairment but not intoxication.

15		THE	COURT:	Meniere's disease?
16	Α.	Any	problem	with the vestibular system
17	could cert	ainl	ly cause	nystagmus.
18		THE	COURT:	But I have that.

2	the presence of at least four clues is consistent
3	with a blood alcohol concentration of .08 or higher.
4	It does not prove .08 or higher, it absolutely does
5	not prove that, certainly not beyond reasonable
6	doubt or anything, but it is consistent with it.
7	Most the majority of individuals who demonstrated
8	at least four clues will have a .08. I have

11	Q. In your opinion is the presence of
12	nystagmus a reliable and valid indicator of the use
13	of a central nervous system depressant such as
14	alcohol?
15	A. If the nystagmus or the lack of smooth
16	pursuit is consistent with what an officer would
17	expect to observe when conducting the test, then
18	yes, it is.

12	Q. Are you aware of any scientific peer
13	reviewed publications that state that there is a
14	there is no correlation between depressant drug use
15	or alcohol consumption in the presence of
16	nystagmus?
17	A. No, but even the critics of the HGN test
18	who might not believe that officers should be
19	allowed to conduct this test, or that they cannot
20	form the proper opinion because they don't have the
21	educational background or whatever, even the critics
22	will concede that alcohol and other depressant drugs
23	and other similar drugs will cause nystagmus at high
24	enough levels of intoxication.

7	Q. And as that goes, have you ever opined
8	that the HGN test standing alone by itself when
9	properly administered is not reliable?
10	A. Well
11	Q. Without regard to the facts?
12	A. Without regard to the no, I've never
13	been asked to do that.
14	Q. Okay. Would you ever do that?

15	A. Would	l I ever do	would I ever say that
16	by itself it is	not reliable	for determining
17	intoxication?	That actually	would be my conclusion.

Reminder

Rule 702 Testimony by experts

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if:

- (1) The testimony is based upon sufficient facts or data;
- (2) The testimony is the product of reliable principles and methods; and
- (3) The witness has applied the principles and methods reliably to the facts of the case.

- It's a screening test, but not proof positive of intoxication
- There are three clues, which are expected to be seen in order: Lack of Smooth Pursuit, Distinct and Sustained Nystagmus at Maximum Deviation, and Onset prior to 45 degrees. If the later clues are seen but the earlier ones are not - then there is a medical or other cause, but not intoxication
 - Significant in my case because the officer reported seeing DSNMD and OSP but no LOSP

- HGN can occur in sober individuals
- If they show HGN in isolation, the officer will conclude that the suspect is not intoxicated
- If they show HGN in isolation, the officer will conclude that the suspect is not intoxicated

- Meniere's Disease, along with other medical conditions, can cause nystagmus.
 - Judge pointed out he has Meniere's Disease

- 4 clues is consistent with, but does not prove alcohol intoxication
 - Odor is consistent
 - Bloodshot/glassy eyes is consistent
- Not looking for 'consistent' looking for a SCIENTIFIC TEST.

- No Peer Reviewed Studies
- By itself, the HGN is not a reliable test for determining intoxication

PAPER

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GENERAL; PSYCHIATRY AND TOXICOLOGY

Steven J. Rubenzer,¹ Ph.D. and Scott B. Stevenson,² Ph.D.

Horizontal Gaze Nystagmus: A Review of Vision Science and Application Issues

ABSTRACT: The Horizontal Gaze Nystagmus (HGN) test is one component of the Standardized Field Sobriety Test battery. This article reviews the literature on smooth pursuit eye movement and gaze nystagmus with a focus on normative responses, the influence of alcohol on these behaviors, and stimulus conditions similar to those used in the HGN sobriety test. Factors such as age, stimulus and background conditions, medical conditions, prescription medications, and psychiatric disorder were found to affect the smooth pursuit phase of HGN. Much less literature is available for gaze nystagmus, but onset of nystagmus may occur in some sober subjects at 45° or less. We conclude that HGN is limited by large variability in the underlying normative behavior, from methods and testing environments that are often poorly controlled, and from a lack of rigorous validation in laboratory settings.

JOURNAL OF FORENSIC

KEYWORDS: forensic science, driving while intoxicated, DUI, sobriety testing, horizontal gaze nystagmus, DWI, HGN, driving under the influence, operating while intoxicated, OWI

The *Standardized Field Sobriety Tests* (SFSTs) have become an important part of driving while intoxicated (DWI) enforcement since they were introduced in the 1980s. Consisting of three standardized psychophysical tests, failure on the SFSTs is used to establish probable cause to arrest and demand a breath test. The defendant's performance on the SFSTs may also be introduced in most states as circumstantial evidence that the defendant is impaired by alcohol (1.2).

Of the three tests, Horizontal Gaze Nystagmus (HGN) has generated the most interest, both from scientific and legal perspectives. The other tests, Walk and Turn and One Leg Stand, arguably do not require any specialized knowledge to interpret, as many courts have held (1-4). Primarily, defendants are scored on behaviors that reflect lack of balance and coordination, symptoms of intoxication that have long been recognized. Legal tradition holds that any lay person can testify as to whether another person appeared intoxicated or not and that such judgments require no special expertise. In contrast, HGN's indications of intoxication are more subtle and not common knowledge. Further, HGN has roots in laboratory science and clinical medicine. For these reasons and others, HGN has often been regarded as a scientific test requiring expert testimony before admitting it as evidence. Although this might seem to require testimony from a behavioral or medical scientist, some courts have taken judicial notice of the test or permitted police officers to qualify as experts based on specialized training. Other courts do not deem HGN to be a scientific test (1-4).

HGN is controversial (5–8) and has been the subject of considerable advocacy by prosecutors and their experts and criticism by defense lawyers and their experts. Not surprisingly, there has been

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a polarization of opinion. At the time of this article, there have been no comprehensive scientific reviews of HGN from the perspective of eye movement science. This article will attempt to fill this void, focusing on laboratory studies of functional eye movement and gaze, including those that employed alcohol. It will not attempt to address physiology or diseases of the eye or nervous system in depth. We will begin with a brief description of the visual system and HGN. We will then address the empirical studies of HGN as a sobriety test, partisan arguments that support or criticize its use, and in the main part of the article, discuss empirical findings in the visual science literature that bear on its reliability and validity. Finally, we summarize our analysis and discuss the limitations of National Highway Traffic Safety Administration's (NHTSA) (1,2) training program for police officers and the implications for use of HGN in a law-enforcement environment.

Overview of the Visual System

The retina is the tissue at the back of the eye on which light is focused and detected. The most sensitive portion of the retina is the fovea, a specialized area that is densely packed with receptors and allows maximum resolution and clarity of images. Animals with a fovea must be able to move the eye to a target of interest, then maintain the gaze to keep the image on the fovea. People are able to change the direction of their gaze in several ways, some of which are reflexive and others which are mostly voluntary. The smooth pursuit (SP) system allows the viewer to smoothly track a steadily moving object, as long as it does not go too fast, thus keeping the image on the fovea. In this way, a motorist can read a road sign, even as it moves relative to the body and the rest of the visual field. Generally, the smooth pursuit system is reported to be able to track smoothly moving objects up to a rate of 30°/sec (9-11), although texts (12,13), a review (14), and authors of individual studies (15-19) report that wide individual differences exist.

Horizontal Gaze Nystagmus: A Review of Vision Science and Application Issues

ABSTRACT: The Horizontal Gaze Nystagmus (HGN) test is one component of the Standardized Field Sobriety Test battery. This article reviews the literature on smooth pursuit eye movement and gaze nystagmus with a focus on normative responses, the influence of alcohol on these behaviors, and stimulus conditions similar to those used in the HGN sobriety test. Factors such as age, stimulus and background conditions, medical conditions, prescription medications, and psychiatric disorder were found to affect the smooth pursuit phase of HGN. Much less literature is available for gaze nystagmus, but onset of nystagmus may occur in some sober subjects at 45° or less. We conclude that HGN is limited by large variability in the underlying normative behavior, from methods and testing environments that are often poorly controlled, and from a lack of rigorous validation in laboratory settings.

Getting Ready for the Cross

- Try not to screw it up
- Emphasize the good points he made for us
- Focus on the reliability/predictability of the test using the Robustness Study



The Robustness the Horizontal Gaze Nystagmus Test

1 aoie 5.

Study Variables - HGN Procedural Variations Examined in This Study

Experiment	Variable	Definition		
	Stimulus	Rate of speed at which the stimulus moves as it passes in		
I	speed	front of a participant's eyes		
	Stimulus	Vertical position of the stimulus relative to the participant's		
	elevation	eye-level gaze		
	Stimulus	Distance of the stimulus from the participant's face		
	distance			
Π	Participant's	Participant standing, sitting, or lying down during		
	posture	examination		
Ш	Participant's	Participant having monocular versus binocular vision		
	vision			

- Put an ad out I'm not kidding on Craigslist asking for participants who would be paid \$75 to drink
 - Had to be:
 - 21
 - a licensed driver
 - drink alcohol
 - and live in Santa Monica or Culver City area

- There were 7 police officers who participated
 - There were 7 sessions
 - Each session, with the exception of 1, only had 3 officers present

- The study basically concludes that variations in stimulus speed, height, and/or distance from the suspect do not effect the validity of the HGN.
- Nor does positioning: standing, sitting, supine
- Moving the stimulus too fast actually helps the suspect because the officers reported an increased amount of false negatives

What's Significant About a BAC of .05 or Less

- KY law give a person with a BAC of under .05 the right to a jury instruction that states the individual is presumed to not be under the influence.
 - 189A.010 (3) In any prosecution for a violation of subsection (1)(b) or (e) of this section in which the defendant is charged with having operated or been in physical control of a motor vehicle while under the influence of alcohol, the alcohol concentration in the defendant's blood as determined at the time of making analysis of his blood or breath shall give rise to the following presumptions: (a) If there was an alcohol concentration of less than 0.05 based upon the definition of alcohol concentration in KRS 189A.005, it shall be presumed that the defendant was not under the influence of alcohol; and

Stimulus Speed BACs (g/dL) Participant's BAC (g/dL) Exam 2 sec (Standard) 1 sec >.100 1 .102 6 4 .143 6 4 2 .127 6 4 .05-.099 0* .097 1 4 .093 4 4 .087 б 4 .084 6 4 2* 3* .075 .064 4 4 0* .063 б 2* .088 2 4 .084 6 4 .077 2* 4 .073 6 4 .069 6 4 .063 4 4 .055 2 2 .054 4 4 .095 6 4 3 .073 4 4 .069 4 4 0* .063 4 2* 0* .063 0+ .059 2 .076 0* 4 4 .058 4 4 .057 4 4 <.05 .049 3 4 4 .044 4 4 .039 0 4 .048 4 0 4 .044 2 2 .042 4 0 .030 2 4 .019 4** 2 .016 4** 4**

Table 10. HGN Signs (Total Number) by Variations of Stimulus Speed, BACs, and Examination Period

*False Negative (FN) and **False Positive (FP) relative to the ranges specified above for the various BACs

signs. A "Hit" occurred when the number of reported signs for a given BAC fell within the range reported below.

BAC	Number of Signs
≥.06	4 - 6
.05059	2 - 4
.03 – .049	0 - 4
<u>< .03</u>	0-2

They changed the stimulus speed on the LOS, but performed the full test.

	en ren ren heren ren heren ren heren h	Stimulus 3	speed
Exam	Participant's BAC (g/dL)	2 sec (Standard)	1 sec
3	.049	4	(4)
	.044	4	4
	.039	4	Ū
4	.048	4	0
	.044	2	2
	.042	4	0
	.030	4	2
	.019	2	4**
	.016	4**	4**
	3	3 .049 .044 .039 4 .048 .044 .048 .042 .042 .030 .019 .016 .016	3 .049 4 .044 4 .039 4 4 .048 .044 4 .044 4 .039 4 4 .048 .042 4 .042 4 .019 2 .016 4**

*False Negative (FN) and **False Positive (FP) relative to the ranges specified above for the various BACs
They changed the stimulus speed on the LOS, but performed the full test.

- There were 18 administrations of the test to subjects with a BAC less than .05
- Of those 18, 11 showed 4 clues 61%

They changed the stimulus elevation and performed the full test.

			Stimulus El	evation (relative to	eye level)
BACs (g/dL)	Exam	Participant's BAC (g/dL)	2" (standard)	0"	4 "
				-	
<.05	2	.047	6**	6**	6**
	3	.047	0*	4	0*
		.031	4	4	4
	4	.019	4**	4**	6**
		.033	0	4	4
		.034	0	0	4
		.038	0	4	4
		.038	0	4	4
		.047	0	4	4
		.049	4	4	4

• 30 administrations of the test

73%

• 22 showed 4 or more clues

			Stimulus	Distance (in front	of face)
BACs (g/dL)	Exam	Participant's BAC (g/dL)	12-15" (standard)	20"	10"
<u>> .100 </u>	1	.129	6	6	6
		.112	4	4	4
		.106	4	6	4
		.104	4	6	6
		.102	6	6	6
05099	1	.091	6	6	6
		.087	4	4	4
		.079	6	6	6
		.070	6	4	6
		.066	2*	4	4
	2	.085	4	6	4
		.079	2*	2*	6
		.076	6	6	6
		.075	2*	4	6
		.064	6	4	6
		.059	4	2	4
		.052	4	4	4
	3	.070	4	4	6
		.063	2	4	4
		.057	2	4	4
		.051	4	4	6**
<.05	1	.044	4	4	4
	2	.045	6**	6**	6**
		.036	4	4	4
	3	.049	4	4	4
		.035	2	4	4
		.029	6**	4**	6**
		.025	4**	4**	2
	4	.046	2	2	4
		.046	4	4	6**
		.037	0	2	0
		.036	6**.	4	4
		.027	4**	4**	4**
		.022	4**	4**	4**
		.120	4**	4**	6**

Table 15 HGN Signs (Total Number) by Stimulus Distance from Face, BAC, and Examination

*False Negative (FN) and **False Positive (FP) relative to the ranges specified above for the various BACs

Table 15: Stimulus distance

			Stimulus	Distance (in from	t of face)
BACs	Exam	Participant's	12-15 [°]	20"	10"
(g/dL)		BAC (g/dL)	(standard)		
<.05	1	.044	4	4	4
	2	.045	6**	6**	6**
		.036	4	4	4
	3	.049	4	4	4
		.035	2	4	4
		.029	6**	4**	6**
		.025	4**	4**	2
	4	.046	2	2	4
		.046	4	4	6**
		.037	0	2	0
		.036	6**.	4	4
		.027	4**	4**	4**
		.022	4**	4**	4**
		.120	4**	4**	6**

• 42 administrations of the test

83%

• 35 showed 4 or more clues

Using it to Cross Examine

- Talked about NHTSA
- Married him to the study
 - he was familiar with it
 - he's read it
 - in fact, he taught on it

Using it to Cross Examine

- Then went right to the tables
- I basically read them and he said, "yes"
- Yes
- Yes

Using it to Cross Examine

Q. The onset of prior you're supposed to move at a particular rate. But for our purposes, or for NHTSA's purposes in this test, they checked the variable of the lack of smooth pursuit stimulus speed?

A. Yes.

7

12

Q. Okay. And in the first column, the two second standard one, there were nine

10 administrations -- nine individuals to whom the test

11 was administered that had a BAC of under .05?

A. Correct.

13 Q. And of those nine individuals, 100 percent 14 showed at least two clues?

15 A. That was the standard two second

16 administration, yes.

<.05	3	.049	4	4
		.044	4	4
		.039	4	0
	4	.048	4	0
		.044	2	2
		.042	4	0
		.030	4	2
		.019	2	4**
		.016	4**	4**
ATT 1 11 11	(100 D) 1 4 4	2011 D. 141 (2010) 1.41 (1.41		

*False Negative (FN) and **False Positive (FP) relative to the ranges specified above for the various BACs

17	Q. Yes. Correct. The standard two second.	
18	And then seven out of nine, or 77 percent of	
19	individuals showed four or more clues four clues	
20	at the standard speed?	
21	A. Correct.	

At the standard speed: 100% showed 2 clues and 77% showed 4 clues - and they were UNDER .05

Cross Exam Summary

- Emphasize the opinion that the HGN, standing alone, is not a valid predictor of whether or not someone is under the influence
- Illustrate through the use of the Robustness Study that the HGN shows false positives at an extremely high rate
- Lay a little bit of ground work for our expert on other causes of nystagmus and the environmental/field variables and training deficiencies of the officers

- Dr. Neal Adams
 - Undergrad at Yale BS Chemistry
 - Medical School at Johns Hopkins Univ.
 - Residency in Ophthalmology at the Wilmer Eye Institute at Johns Hopkins

- Retina Fellowship at Johns Hopkins
- Board Certified
- Licensed in 4 states and DC
- Professor at Johns Hopkins
- Currently in private practice

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Academic Appointments and Clinical Positions

2011 – present *Editor-in-Chief* <u>Eve Reports</u> – www.eyereports.org – ISSN 2039-4756 Peer-Reviewed Ophthalmic Medical Journal

2010 – present

Clinical Consultant – Diseases and Surgery of the Vitreous and Retina and Visual Electrophysiology Private Sector

2008 - 2010

Chair of Department of Ophthalmology Associate Professor of Ophthalmology Department of Ophthalmology The Paul L. Foster School of Medicine The Texas Tech University Health Sciences Center

2005 - 2008

Chief of Division of Visual Physiology Director of Retinal Dystrophy Center Assistant Professor of Ophthalmology Department of Ophthalmology The Johns Hopkins University School of Medicine The Wilmer Eye Institute of The Johns Hopkins Hospital

2003 - 2004

Assistant Professor of Ophthalmology Department of Ophthalmology The Johns Hopkins University School of Medicine The Wilmer Eye Institute of The Johns Hopkins Hospital

2003 - 2004

A. Edward Maumenee Scholar* Department of Ophthalmology The Johns Hopkins University School of Medicine The Wilmer Eye Institute of The Johns Hopkins Hospital *Wilmer's Highest Honor Bestowed on a Junior Faculty Member

- His testimony really focused on the lack of scientific validity
- Multiple causes of HGN



- His testimony really focused on the lack of scientific validity
 - things that look like nystagmus...but really aren't



- His testimony really focused on the lack of scientific validity
 - gives an opinion but also adds useful information about the timing on LOSP



- The HGN is not sound science
 - the officers aren't capable of determining if nystagmus is present
 - the officers can't distinguish between alcohol induced and non-alcohol induced
 - we have to look at external factors to validate the results of the HGN (agreed to by their expert as well)



COMMONWEALTH OF KENTUCKY CARROLL DISTRICT COURT

CASE NUMBER 13-T-01250 COMMONWEALTH OF KENTUCKY VS.

ENTE JUN 2 9,2015 LAMAN LISTARK, CLERK

AND

JAMES SEILER

CASE NUMBER 13-M-00494 COMMONWEALTH OF KENTUCKY VS. COURTNEY HEARN

The Defendants in the above styled cases have filed Motions in Liminie requesting the HGN and "lack of convergence" tests not be allowed into evidence without the prosecution laying a proper foundation for the introduction of the test results. Conversely the Commonwealth believes that the HGN test is so scientifically reliable that it should be accepted into evidence without a preliminary foundation being provided.

In this case, the respective Defendants were stopped by the police for driving under the influence. At the stop of Defendant Seiler, the police administered a horizontal gaze nystagmus (hereinafter referred to as "the HGN") test At the stop of Defendant Hearn, the police administered a "lack of convergence" test.

1

by all measures, it would be fundamentally unfair to the defense to allow admission without a proper foundation.

Although there is ample testimony of its use in the field, the testing is not reliable enough for this Court. The error rates, even by the State's standards, eliminate one quarter of the tests. If you take into account all of the physical, behavioral and medical attributes that may cause nystagmus as testified by the defense, one quarter of tests eliminated may be low.

HGN and "lack of convergence" testing is scientific by nature. Unlike other types of evidence, like finger printing, it does not meet the requirements of the <u>Daubert</u>, supra for admission into evidence.

THEREFORE IT IS ORDERED that the Defendant's Motion in Liminie to prevent the introduction into evidence with an expert foundation being put forth is SUSTAINED.

Tomber Frank

THOMAS M. FUNK, JUDGE, Division II

Elizabet a. Charlen

ELIZABETH A. CHANDLER, JUDGE, Division I

COMMONWEALTH OF KENTUCKY CARROLL DISTRICT COURT

2

COMMONWEALTH OF KENTUCKY)
PLAINTIFF)
vs) FILE NO. 13-T-01250
)
JAMES SEILER	5
DEFENDANT)
AND	OPDEP
AND	ORDER
COMMONWEALTH OF KENTUCKY)
COMMONWEALTH OF KENTUCKY	
COMMONWEALTH OF KENTUCKY PLAINTIFF VS)))) FILE NO. 13-M-00494
COMMONWEALTH OF KENTUCKY PLAINTIFF VS)))) FILE NO. 13-M-00494)
COMMONWEALTH OF KENTUCKY PLAINTIFF VS COURTNEY HEARN)))) FILE NO. 13-M-00494))

This matter came before the Court on the Commonwealth's Motion to Clarify its ruling in the above case. The Order was entered June 29, 2015 and dealt with the horizontal gaze nystagmus (HGN) used at trial.

IT IS ORDERED and ADJUDGED as follows:

 The Court rules that the HGN test does not have an indicia of reliability. The use of HGN test results are inadmissible unless an evidentiary foundation is laid by a qualified expert. The Court rules that the HGN test is a scientific test and the qualified expert necessary to lay a proper foundation must be someone qualified to the particular science of this type of test.

A police officer, alone and without the proper scientific training, would not

qualify as the appropriate expert for the introduction of this test into evidence.

THOMAS M. FUNK, JUDGE CARROLL DISTRICT COURT

ELIZABETH A. CHANDLER, JUDGE CARROLL DISTRICT COURT

Copies to:

All Attorneys of Record



COMMONWEALTH OF KENTUCKY UNIFIED COURT OF JUSTICE CARROLL DISTRICT COURT CASE NO. 13-T-001250

COMMONWEALTH OF KENTUCKY

PLAINTIFF

NOTICE OF APPEAL

JAMES F. SEILER

VS.

DEFENDANT

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

Notice is given that the Commonwealth of Kentucky, hereby appeals for a certification of law from a judgment by the Carroll District Court dated March 17, 2016, dismissing the charge of Operating a Motor Vehicle While Under the Influence of Alcohol which upheld its order suppressing the HGN evidence. The Commonwealth of Kentucky is the Appellant and James F. Seiler is the Appellee.

Respectfully submitted,

CARROLL COUNTY ATTORNEY 115 Fifth Street Post Office Box 246 Carrollton, KY 41008 (502) 732-7009

Attorneys for Commonwealth of Kentucky

Bv: Nicholas A. Marsh, Carroll County Attorney

Challenges

- 701 the HGN needs science to make sense. The police officer is not an expert, therefore its inadmissible as irrelevant
- 702 challenge the officer on her qualifications
 - use their training record and material

Challenges

- Use the NHTSA manual
- Use the Robustness Study
- Use the lack of peer reviewed studies validating the test
- Use the Journal of Forensic Science article

Additional Resources

NHTSA Training Manuals

DWI Detection & Standardized Field Sobriety Testing:

- Instructor Manual (DWI Detection) February 2006.pdf
- Instructor Manual (DWI Detection) May 2013.pdf
- Instructor Manual (DWI Detection) September 2004.pdf
- Student Manual (DWI Detection) February 2006.pdf
- Student Manual (DWI Detection) May 2013.pdf
- Student Manual (DWI Detection) September 2004.pdf

SFST Refresher Training Course:

- Instructor Manual (4-hr Refresher) August 2008.pdf
- Instructor Manual (8-hr Refresher) August 2008.pdf
- Student Manual (4-hr Refresher) August 2008.pdf
- Student Manual (8-hr Refresher) August 2008.pdf

SFST Teacher-Trainer:

- Student-Instructor Manual (SFST) February 2006.pdf
- Teacher-Trainer Manual (SFST) February 2006.pdf

Introduction to Drugged Driving:

- Instructor's Manual (Intro to DD) February 2006.pdf
- Participant Manual (Intro to DD) February 2006.pdf

<u>www.suhrelaw.com/</u> <u>NHTSA</u>

<u>www.suhrelaw.com/</u> <u>seminars</u>