Upon successfully completing this session the participant will be able to:

- State the origin and evolution of the Drug Evaluation and Classification Program.
- Describe research and demonstration project results that validate the effectiveness of the program.
- State the impact of legal precedents established by case law.
- Correctly answer the “topics for study” questions at the end of this session.

**CONTENT SEGMENTS**

A. Origin and Evolution of Drug Evaluation & Classification Program
B. Evidence of Program Effectiveness
C. Case Law Review

**LEARNING ACTIVITIES**

Instructor Led Presentations
Reading Assignments
The DEC program was developed by personnel of the Los Angeles Police Department.

Development of the DEC program began in the early 1970’s, in response to a growing awareness that many people apprehended for impaired driving were under the influence of drugs rather than alcohol.

Dick Studdard (Traffic Officer):

- Sergeant Studdard retired from the LAPD in June, 1990.

- Sgt. Studdard and his fellow officers often encountered many impaired drivers whose BACs were zero or very low.

They occasionally succeeded in having physicians examine some of these low BAC subjects, resulting in diagnosis of drug influence.

- Note: examining physicians subsequently would be subpoenaed to testify in contested cases.

- For various reasons, physicians were often reluctant or unwilling to conduct these examinations and offer opinions.
Some reasons why doctors may be reluctant:

- They typically receive little training in the recognition of specific signs of drug impairment, particularly at street level doses.

- They may not see the subject until hours after the drugs were used, by which time the signs and symptoms often have changed.

As a result, some drivers whom Studdard and other officers were certain were impaired were not prosecuted or convicted for DWI.

Studdard concluded that it was essential to develop appropriate procedures that officers could use when confronted with persons suspected of drugs.

Len Leeds (Narcotics Officer) and deceased in 1995:

- Was approached by Studdard and asked to collaborate in the development of a program to help identify drug-impaired subjects.

- Initiated some independent research by consulting with physicians, enrolling in relevant classes, studying text books, technical articles, etc.

- Secured management level support within the department to continue research and program development.

As time went on, many other key persons both within and outside LAPD contributed to the development and refinement of the program.
In 1979, the program was officially recognized by LAPD.

Note: The LAPD program was referred to as the Drug Recognition Expert (DRE) program.

B. Evidence of Program Effectiveness

LAPD began to work with the National Highway Traffic Safety Administration (NHTSA) on issues relating to this program in the early 1970’s.

The first step was to develop and validate a battery of standardized field sobriety tests for investigating alcohol impaired driving.

LAPD personnel played a major role in the research that led to the wide spread use of Horizontal Gaze Nystagmus, the Walk and Turn test, and the One Leg Stand test.

By the early 1980’s, NHTSA completed its validation of the standardized tests for DWI enforcement.

At this time, NHTSA began to assist LAPD in validating the Drug Recognition Expert program.
The DEC program evolved into what is essentially a three-step process.

- First, establish that the subject is impaired and verify that his or her alcohol level is not consistent with the degree of impairment that is evident.

Clarification: the first portion of the drug influence evaluation is devoted principally to Standardized Field Sobriety Testing of the subject, and to the administration of a breath test.

Inconsistency between the observed impairment and the BAC suggests the presence of some other drug(s), or some other complicating factor such as an illness or injury.

- Second, use some simple evaluation procedures to determine whether the impairment may stem from illness or injury, requiring medical attention.

- Third, use evaluation procedures to determine what category (or categories) of drugs are the likely cause of the impairment.

**Key Point**

The entire evaluation process is standardized.

- Administered the same way to all subjects.
- Administered the same way by all officers.
The Need for Reliable Standardized Assessment Procedure

- One reason for needing a reliable standardized assessment procedure is that we may be called upon to submit evidence of an articulable suspicion of drug influence to support our request for a chemical test of the subject.

- Some courts or motor vehicle hearings officers may find that a low BAC result, by itself, does not provide adequate basis for requesting the subject to submit to a 2nd chemical test.

- Another reason is that the subject may refuse to submit to the chemical test, denying us of scientific evidence of drug influence. In that case, conviction or acquittal may hinge on the officer’s observations and expertise as a DRE.

- A third reason is that chemical tests usually disclose only that the subject has used a particular drug recently. The chemical test usually does not indicate whether the drug is psychoactive at the present time.

- Thus, the DRE procedures are needed to establish that the subject not only has used the drug, but also that he or she is under the influence.
• A fourth reason is that it can be expensive and require a large sample of blood or urine to perform a broad analysis for any or all drugs. Practical constraints require that we be able to point the laboratory technician toward those types of drugs most likely to be found in the sample.

It is always possible that a person suspected of drug impairment is actually suffering from some medical problem. If a sample is collected, and the subject is not examined by someone who is qualified, evidence of medical problems may not come to light until it is too late.
Two Stages of Validation

NHTSA assisted LAPD in a two-phase validation study.

- Laboratory validation, using volunteers who ingested selected drugs.
  The Johns Hopkins validation was conducted in 1984.

- Field validation, using persons actually arrested in Los Angeles on suspicion of drug influence.

  The LAPD Field Validation Study was conducted in 1985.
1. Laboratory Validation Study

The Laboratory Validation took place at Johns Hopkins University in Maryland. The drug examiners were senior DREs from LAPD. The LAPD participants: Dick Studdard; Jerry Powell; Pat Russell; and Doug Laird.

The laboratory experiments were planned and conducted by researchers from Johns Hopkins.

Volunteers each took a “pill” and smoked a “cigarette.”

The “pill” contained either no drug (placebo) or one of the following drugs:

- Secobarbital (CNS Depressant)
- Valium (i.e., Diazepam – CNS Depressant)
- d-amphetamine (CNS Stimulant).
Drug Recognition Expert Course
Session 3
Development and Effectiveness of the Drug Evaluation and Classification Program
Laboratory Validation Study
Johns Hopkins University

Note: Secobarbital, diazepam and d-amphetamine were the pharmaceuticals used in the study. All were administered in identical gelatin capsules and were not brand name drugs.

A common brand name for secobarbital is Seconal; a common brand name for diazepam is Valium and a common brand name for d-amphetamine is Dexedrine.

The “cigarette” contained either THC or no drug (placebo). Neither the volunteers nor the LAPD officers knew what the volunteers had taken.

Note: this condition is known as a “double blind” experiment. The people being tested and the people doing the testing are kept uninformed of the test condition.

Two different dose levels of Marijuana, Diazepam and d-amphetamine were used.

Clarification: some of the Diazepam and d-amphetamine pills were “weak,” some were “strong.” Similarly, some of the Marijuana cigarettes were “weak,” some “strong.” All of the Secobarbital pills were “strong.”
Normal daily dose for therapeutic purposes:
- Secobarbital: approx. 100 mg.
- Diazepam: 4-40 mg.
- d-amphetamine: 15 mg.

Doses administered for this study:
- Secobarbital: 300 mg.
- Diazepam: weak – 15mg, strong – 30mg.
- d-amphetamine: weak – 15 mg, strong – 30 mg.
- Marijuana: weak – 12 puffs or 1.3% THC cigarettes, strong – 12 puffs of 2.8% THC cigarettes.

Results
- The DREs were excellent in identifying subjects who received only placebo doses: they classified 95% of the drug free subjects as “not impaired.”
- Similarly, they were excellent in identifying the high dose subjects.
- They classified as “impaired” 98.7% of the subjects who received Secobarbital or strong doses of Marijuana, Diazepam or d-amphetamine.
Laboratory Study Results (Cont.)

- Correctly identified the category of drugs for 91.7% of high-dose subjects
- DRE officers were less successful in classifying low-dose subjects
  - 17.5% of d-amphetamine impaired
  - 32.5% of weak marijuana impaired

Notes:_______________________________________________
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- They correctly identified the category of drug for 91.7% of those strong dose subjects.
- The DREs were less successful in identifying the weak dose subjects.
- Only 17.5% of the subjects who received the weak dose of d-amphetamine were classified as “impaired.”
- Only 32.5% of the subjects who smoked the “weak” Marijuana cigarettes were classified as “impaired.”
- The results of the laboratory validation study were considered to be extremely positive.
- The DRE procedures correctly identified the category of drugs in more than 90% of the subjects who were impaired.
- The procedures only rarely indicated that unimpaired subjects were under the influence of drugs.
- Laboratory studies can only allow certain dose levels of drugs, which are much lower than those seen at street levels. Therefore, participants in laboratory studies may not show many of the signs of impairment that are seen with subjects ingesting street level doses of drugs.
2. Field Validation Study

The field validation study was based on one hundred seventy-three people actually arrested on suspicion of driving under the influence of drugs.

Point out that during the study period, many other drugged driving arrests were made by LAPD officers.

None of the 173 cases involved a crash. In all of the cases, the arrested subjects agreed to submit to a blood test.

Twenty-eight different DREs from LAPD and the L.A. area participated in the examinations of these one hundred seventy-three subjects.

The researchers excluded all cases where the subjects refused to give blood, since it would have been impossible to check the DREs accuracy in those cases. Similarly, they excluded all cases that involved crashes, since the subjects’ injuries could have confounded the drug examination. Also excluded were subjects who were found in possession of drugs or had any charges other than the drugged driving charge.
Blood tests confirmed:
- One suspect had no drugs or alcohol
- 10 had alcohol only
- 37 (21%) had one drug
- 82 (47%) had two drugs
- 43 (25%) had three or more drugs

Results of the Field Study

Based on the independent blood tests, only one of the one hundred seventy-three subjects was found to have no alcohol or other drugs. Another ten subjects were found to have only alcohol in them.

Thirty-seven (21%) of the subjects were found to have only one drug other than alcohol. Eighty-two had two drugs other than alcohol (47%) and forty-three (25%) had three or more drugs other than alcohol.

This means that one hundred twenty-five of the one hundred seventy-three subjects had ingested two or more drugs other than alcohol: that is more than 72% of the subjects.

PCP was the drug most often found among these one hundred seventy-three subjects: more than half of them (56%) had used PCP.
Field Validation Study (Cont.)
Los Angeles

Blood tests confirmed the presence of at least one “predicted” category of drugs for more than 90% of the suspects

The key finding of this study was the following:

- For more than nine out of ten of the subjects (92.5%), the blood test confirmed the presence of at least one drug category “predicted” by the DREs.

Confirmation Rates for Specific Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Confirmation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phencyclidine (PCP)</td>
<td>92%</td>
</tr>
<tr>
<td>Narcotic Analgesics</td>
<td>85%</td>
</tr>
<tr>
<td>Cannabis</td>
<td>78%</td>
</tr>
<tr>
<td>CNS Depressants</td>
<td>50%</td>
</tr>
</tbody>
</table>

The confirmation rates for specific categories:
PCP: blood tests confirmed DREs’ predictions in 92% of the cases.
Narcotic Analgesics: blood tests confirmed 85% of the DREs’ predictions.
Cannabis: blood tests confirmed 78% of DREs’ predictions.
CNS Depressants: blood tests confirmed 50% of DREs’ predictions.
CNS Stimulants: blood tests confirmed 33% of DREs’ predictions.

Numerous states have conducted comparisons of laboratory analysis and DRE opinions. The correlation rates exceeded 80% in those studies.

A Study conducted in 1990 by the Arizona Department of Public Safety Central Regional Crime Laboratory compiled records of the toxicological analysis corresponding to Arizona DREs were analyzed showing that a laboratory confirmation rate of 86.5% had been achieved.

The overall conclusion of the laboratory and field studies is that the DEC Program is an effective tool for law enforcement.
D. **Case Law Review**

*Court Rulings*

Favorable Court Rulings on DEC Procedures.

Courts in various states have ruled favorably on the DEC Program. American courts employ either the Frye or Daubert Standard for determining the admissibility of scientific evidence.

The Frye standard is the traditional test for admissibility of “new” scientific evidence.

The Frye standard: “Is the procedure or principle espoused, accepted by the relevant scientific community?”

Frye standard was set by the US Supreme Court in 1923.
In Daubert, courts serve as a gatekeeper for all scientific evidence. Daubert standard requires a showing of reliability before scientific evidence can be admitted.

Courts assess evidence by considering four factors:

- Opinions are testable.
- Methods/principles have been subject to peer review.
- Known error rate can be identified.
- Opinions rest on methodology that is generally accepted within the relevant scientific/technical community.
• **State of Arizona v. Dayton Johnson and Samuel Rodriguez, et al, NOS 90056865 and 90035883, (1990).** An Arizona court (Tucson Municipal Court) ruled that the Frye Standard was met. However, upon appeal, the Arizona State Supreme Court ruled that the Frye Standard did not apply to the DEC Program.

• **Washington v. Baity, 991P.2d, 1151, 140 Wn. 2d 1 (2000).** A Washington Supreme Court ruled that the DRE protocols are the application of traditional techniques.

• **State of Minnesota, City of Minneapolis v. Larry Michael Klawitter, 518 N.W.2d 577, (1993).** A Minnesota Court (City of Minneapolis) ruled that outside of nystagmus, the DEC Program is not subject to the Frye Standard.

• **State of Colorado v. Daniel Hernandez, 92M 181, (1992).** The Colorado Supreme Court determined that the Frye Standard applies to the protocol because the process has “scientific elements.” A Colorado Court (Boulder County Court) ruled that the procedures used by DREs are not new or novel and the Frye Standard did not apply.
Case Law Review (Cont.)

“Daubert” Standard

- New Mexico v Aleman
- Nebraska v Cubrich

- New Mexico v. Mariam Aleman, Dona Ana County, 3rd District (2003). A New Mexico Court ruled the DRE’s opinion was correct and that the DRE protocol is admissible.

- Nebraska v. Cubrich, Case No. CR03-8203 Sarpy County Court (2004).
  In this case, the court used the Daubert Standard. In many jurisdictions, it will not be necessary to have expert scientific testimony to secure admissibility of a DRE’s examination of a subject.

The DEC Program is gaining acceptance in many courts.

In fact, testimony based on DRE investigation has been accepted by courts for years.

Expert testimony regarding drug influence has long been accepted by numerous courts. The components of DRE evaluation are generally accepted in the scientific community.

The DEC Program simply combined those components into a systematic and standardized procedure. Thus, many prosecutors believe that FRYE standards do not apply to DRE evaluations and testimony.
**HGN Case Law**

One key element of DEC – namely, Horizontal Gaze Nystagmus – has been recognized as meeting the Frye standard by several State Supreme Courts. First to do so was Arizona, in the case known as State vs. Blake.

Point out that additional court rulings on HGN are summarized in the participant’s Manual.

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**Summary of HGN Case Law**

The prevailing trend is for courts to admit HGN as evidence of impairment, with the proper scientific foundation.

But courts consistently reject all attempts to introduce HGN as evidence of a quantitative BAC.

The court ruled that in cases where there is no chemical test to determine a BAC level, HGN test results can be admitted the same as of Standardized Field Sobriety Tests to show a “neurological dysfunction,” one cause of which could be the ingestion of alcohol.
Topics for Study Questions
1. State four reasons why it is important not to rely simply on a chemical test to establish a subject’s drug impairment.

2. What categories of drugs were included in the Johns Hopkins Laboratory Study?

3. In what percentage of cases in the Los Angeles Field Validation Study did blood tests confirm the DREs’ opinion that PCP was present?

4. What percentage of subjects were found to be polydrug users in the LAPD Field Validation Study?

5. What was the landmark State Supreme Court case that upheld the use of HGN as evidence of impairment?

6. What do we call the standards for admissibility of scientific evidence, set by the U.S. Supreme Court?

7. Which State first found the Drug Evaluation and Classification procedures met the standards of scientific evidence?
“Frye” Decisions Regarding Admissibility of Drug Recognition Expert Testimony

“Frye” refers to a United States Federal Court opinion dealing with the admissibility of scientific evidence. The court established that new or novel scientific evidence, or the novel application of scientific principles, must be shown to have met with general acceptance in the relevant scientific community before it can be admitted.

1990
The Municipal Court of the City of Tucson, County of Pima, State of Arizona

“Virtually all the witnesses agreed that the scientific procedures utilized by trained drug recognition experts are reliable and are generally accepted in the scientific community. The methodology in place, used by trained law enforcement personnel in the field, has been shown to produce reasonably reliable and uniform results that will contribute materially to the ascertainment of the truth.”

On May 7, 1992, the Arizona Supreme Court heard oral arguments in a special proceeding regarding this case. The Justices uniformly rejected the application of “Frye” to the DRE procedures. The Chief Justice observed that the component examination procedures had been established for fifty years.

The prosecutors in this case were Tom Rankin (Tucson) and Cliff Vanell (Phoenix). Expert witnesses for the prosecution included: Sgt. Richard Studdard, LAPD, Marcelline Burns, Ph.D., Sgt. Thomas Page, LAPD, Zenon Zuk, M.D., and Eugene Adler, toxicologist.

1992
County Court, Boulder, Colorado
Case No. 92M181 (Unpublished Opinion)
People of the State of Colorado v. Daniel Hernandez

“The DRE methods are accepted within the scientific community because they have found to be reliable.”

“The Court finds that the expert does have sufficient specialized knowledge to assist the jurors in better deciding whether the defendant drove his car when under the influence of a specific drug. The DRE testimony can be used at trial provided a sufficient foundation is laid.” Overall, this court ruled that the procedures used by DRE’s are not new or novel scientific techniques that must meet the “Frye” standard.

The prosecutor in this case was David Archeluta (Boulder County). Expert witnesses for the prosecution include: Sergeant Thomas Page, LAPD, Zenon Zuk, M.D., Marcelline Burns, Ph.D., Rick Abbott, M.D., and Laurel Farrell (chemist).
“Given proper foundation and subject to other qualifications, opinion testimony by experienced police officers trained in use of so-called drug recognition protocol is generally admissible in evidence in a trial of a defendant for driving while under the influence of a controlled substance.”

The Court determined that the gaze nystagmus test satisfies the requirements of “Frye”.

“We agree with the trial court that the officer should be allowed to give an opinion based on the officer’s training and experience and his or her observations following the 12-step drug recognition protocol, as long as (a) there is sufficient foundation for the specific opinion expressed, (b) the state does not attempt to exaggerate the officer’s credentials by referring to the officer as a “Drug Recognition Expert” or to unfairly suggest that the officer’s opinion is entitled to greater weight than it deserves, and...” “We add only that it should be obvious that the mere fact that such opinion testimony by itself will be sufficient to support a guilty verdict.”

The court also determined that, outside of nystagmus, the components of a DRE examination are not scientifically new and are not subject to the “Frye” test.

The trial court stated, “…there is nothing scientifically new, novel, or controversial about any component of the DRE protocol itself. The symptomatology matrix used by DRE’s to reach their conclusions is not new and is generally accepted in the medical community as an accurate compilation of signs and symptoms or impairment by the various drug categories.”

The prosecutor in this case was Karen Herland (City of Minneapolis). Expert witnesses for the prosecution included: Sergeant Thomas Page, LAPD, Dr. Marcelline Burns (psychologist), Dr. David Peed (optometrist), Dr. Zenon Zuk (medical doctor), Eugene Adler (criminalist), Dr. S.J. Jejurikar (Minnesota Bureau of Criminal Apprehension), and Robert Meyer (toxicologist).
(HGN) test results are generally admissible to establish (1) that the defendant was impaired; and/or (2) that the defendant was over the legal limit; and/or (3) the defendant’s specific breath or blood alcohol level at the time he performed the test.”

This court found that the “Frye” standard is inapplicable to the DRE Protocol because neither the protocol nor any of its subsets (including HGN, VGN, and Lack of Convergence) are “scientific”.

Further, these tests are neither new nor novel. The Court also state that “Frye” is inapplicable to HGN, VGN, and LOC because none of them are new or novel. “None of these tests or the theories and procedures they encompass, are new, novel, or emerging scientific techniques. The medical and psychological professions have acknowledged the tests’ underlying theories and procedures for decades.”

The Court concluded:

“Drug recognition training is not designed to qualify police officers as scientists, but to train them as observers. The training is intended to refine and enhance the skill of acute observation…and to focus that power…in a particular situation.”

This court followed the Klawitter (Minnesota) decision, that it requires the state to “lay a proper predicate before referring to a DRE as anything other than a DRE or Drug Recognition Evaluator or Examiner.”

“The real issue is not the admissibility of the evidence, but the weight it should receive. That is a matter for the jury to decide.”

The prosecutor in this case was Steve Talpins (Dade County). Expert witnesses for the prosecution in this case included: Marcelline Burns, Ph.D., Zenon Zuk, M.D., Robert Dobie, M.D., Sergeant Thomas Page, LAPD, and others.

2000
Case No. 66876-1
State of Washington vs. Michael Baity
Judge J. Talmadge, WA Supreme Court
Original filed 2000

In this case, the court was asked to determine if a drug recognition protocol, used by trained drug recognition officers to determine if a suspect’s driving is impaired by a drug other than alcohol, meets the requirements of Frye v. United States, 293 F. 1013,34 A.L.R. 145 (1923), for novel scientific evidence.

The issue brought before the court was; Is a drug recognition program novel scientific evidence generally accepted in the scientific community, thus satisfying the Frye test for admissibility?

The facts in this case were:

The state charged Baity with one count of DUI, in violation of RCW 46.61.502 (l) (b) (c), and one count of driving while license suspended in the third degree, in violation of RCW 46.20.342(l)(c), after he failed roadside SFST’s and showed signs of drug impairments.
In a pretrial motion in Baity’s case, the State sought to qualify the DREs as experts and to obtain a ruling on the admissibility of DRE evidence with respect to the defendant’s drug impairment and the evaluation process used to determine that impairment. Specifically, the State sought to admit testimony that Baity’s impairment was consistent with the symptoms associated with one of seven categories of drugs. Additionally, the state moved to admit testimony regarding the use of the horizontal gaze nystagmus (HGN) test, both for the detection of alcohol and for the detection of drugs. Baity moved to suppress all DRE evidence, including the HGN test, on the basis that the DRE program and protocol constitute novel scientific evidence subject to the Frye test for admissibility.

On May 19, 1998, the Pierce County District Court judges issued their opinion titled, “Opinion Regarding Admissibility of HGN and DRE.” In that opinion, they denied the defendants’ motions to suppress the field sobriety tests (SFSTs) as to their alcohol impairment, holding those tests are “reasonably understandable to the ordinary person” and therefore not subject to Frye. Clerk’s Papers at 56. The court also noted some features of the DRE protocol were either not of a scientific nature or were scientific, but not novel.

The court ruled that after analyzing the DRE protocol and the approach of other courts to its admissibility, that the DRE protocol and the chart used to classify the behavioral patterns associated with seven categories of drugs have scientific elements meriting evaluation under Frye. They also found that the protocol to be accepted in the relevant scientific communities. However, the court ruled that there is confined situations where all 12-steps of the protocol have been undertaken. Moreover, an officer may not testify in a fashion that casts an aura of scientific certainty to the testimony. The officer also may not predict the specific level of drugs present in a suspect. The DRE officer, properly qualified, may express an opinion that a suspect’s behavior and physical attributes are or are not consistent with the behavioral and physical signs associated with certain categories of drugs.

The court also held that the protocol meets the mandate of Frye. An officer may testify concerning such drug impairment, subject to the limitations set forth in this opinion, upon meeting the requirements of ER 702 and 703 for the admission of expert opinion testimony. The court reversed the suppression orders of the Pierce County District Court and remanded the cases for further proceedings consistent with this opinion.

2003
Case No. CR-2003-00025
State of New Mexico vs. Miriam Aleman
State of New Mexico, County of Dona Ana
Third Judicial District
Judge Silvia E. Cano-Garica

Defendant made a motion In Limme to exclude the testimony of the DRE officer. They heard the testimony of various witnesses and reviewed the State’s Brief in support of the DRE testing. Testimony and other applicable documents found that:
The DRE officer was recognized as an expert of DRE testing based upon his specialized knowledge and experience, the DRE evaluation method is generally accepted in the particular scientific field of forensic toxicology, the DRE evaluation provides critical information which assists the toxicologist in forming an opinion as to whether the driver was impaired by the use of drugs at or near the time the driver was driving the motor vehicle.

The DRE protocols are the application or incorporation of traditional techniques in the biology, physiology, anatomy, chemistry, pharmacology and toxicology fields, and the ultimate decision as to the driver’s alleged impairment, based on all of the testimony received, rests with the jury.

2004
Case No. CR 03-8203
State of Nebraska vs. Timothy J. Cubrich
Judge Todd J. Hutton, Sarpy Co. Court

The court was asked to determine the admissibility of the law enforcement officer’s opinion that the defendant was under the influence of a drug, other than alcohol, to the extent that his abilities to safely operate the vehicle were appreciable impaired.


The court concluded: Since Daubert, the court now serves in the “gatekeeping” role in which it is called upon to determine the reliability and relevance of expert testimony. There is no Case Law in Nebraska which has specifically addressed the issue of expert testimony relating to impaired drivers suspected of using drugs. Nor is there a statutory procedure by which Drug Recognition Examinations or the opinions derived there from have been codified.

Application of the Daubert standard provided a number of considerations the court used in determining the admissibility of evidence through the testimony of an expert, which included:

The 12-step protocol which relies on determining if a person is drug impaired has been recognized in the scientific community, including physicians, ophthalmologists, and forensic toxicologists, as a dependable methodology by which an officer, properly trained, can identify impairment and the category of drug(s) which are impairing the suspect’s cognitive and physical capabilities.

The methodology is reliable because it is dependent on a fixed set of assessments which are verified by a toxicology test. The evaluation process includes HGN testing which has been found to meet the Frye standard of admissibility. Additionally, the HGN and VGN tests have been subject to peer review and publication. The remaining tests serve to screen the suspect’s mental and physical condition documenting clues explaining why the person may or may not be impaired and if so the source(s) involved.
The drug recognition assessment is a tool by which a specially trained officer can conclude “based on the totality of results” whether or not a person is impaired by a drug other than alcohol.

The court found that the DREs opinion was correct in that the Defendant showed signs of impairment from a drug, other than alcohol, which caused him to seek a toxicological examination. The category of drug is admissible for the limited purpose of establishing foundation for drug screen conducted by the toxicologists.
INTRODUCTION

The following state case law summary contains the seminal cases for each state, the District of Columbia and the Federal courts on the admissibility of HGN. Three main issues regarding the admissibility of the HGN test are set out under each state: evidentiary admissibility, police officer testimony, and purpose and limits of the HGN test results. The case or cases that address each issue are then briefly summarized and cited.

**Alabama**

I. Evidentiary Admissibility

HGN is a scientific test that must satisfy the Frye standard of admissibility. The Supreme Court of Alabama found that the State had not presented "sufficient evidence regarding the HGN test's reliability or its acceptance by the scientific community to determine if the Court of Criminal Appeals correctly determined that the test meets the Frye standards."


II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court did not address this issue.

**Alaska**

I. Evidentiary Admissibility

HGN is a scientific test. It is generally accepted within the relevant scientific community.


II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer may testify to the results of HGN testing as long as the government establishes a foundation that the officer has been adequately trained in the test.
III. Purpose and Limits of HGN

HGN testing is “a reliable indicator of a person’s alcohol consumption and, to that extent, HGN results are relevant.” The court cautioned that the HGN test could not be used to correlate the results with any particular blood-alcohol level, range of blood-alcohol levels, or level of impairment. Ballard, 955 P.2d at 940.

Arizona

I. Evidentiary Admissibility

HGN is a scientific test that needs to satisfy the Frye standard of admissibility. State has shown that HGN satisfies the Frye standard. State v. Superior Court (Blake), 718 P.2d 171, 181 (Ariz. 1986) (seminal case on the admissibility of HGN).

II. Police Officer Testimony Needed to Admit HGN Test Result

“The proper foundation for [admitting HGN test results] . . . includes a description of the officer’s training, education, and experience in administering the test and showing that proper procedures were followed.”

III. Purpose and Limits of HGN

HGN test results are admissible to establish probable cause to arrest in a criminal hearing. State v. Superior Court (Blake), 718 P.2d at 182.

“Where a chemical analysis has been conducted, the parties may introduce HGN test results in the form of estimates of BAC over .10% to challenge or corroborate that chemical analysis.” Ricke, 778 P.2d at 1361.

When no chemical analysis is conducted, the use of HGN test results “is to be limited to showing a symptom or clue of impairment.” Hamilton, 799 P.2d at 858.
Arkansas

I. Evidentiary Admissibility

Novel scientific evidence must meet the Prater (relevancy) standard for admissibility. Because law enforcement has used HGN for over thirty-five years, a Prater inquiry is not necessary as the test is not “novel” scientific evidence. Whitson v. Arkansas, 863 S.W.2d 794, 798 (Ark. 1993).

II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

HGN may be admitted as evidence of impairment, but is not admissible to prove a specific BAC. Whitson, 863 S.W.2d at 798.

California

I. Evidentiary Admissibility


“A consensus drawn from a typical cross-section of the relevant, qualified scientific community accepts the HGN testing procedures.” Joehnk, 35 Cal. App. 4th at 1507, 42 Cal. Rptr. 2d at 17.

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer testimony is insufficient to establish “general acceptance in the relevant scientific community.” Leahy, 882 P2d. at 609. Also see People v. Williams, 3 Cal. App. 4th 1326 (Cal. Ct. App. 1992).

Police officer can give opinion, based on HGN and other test results, that defendant was intoxicated. Furthermore, police officer must testify as to the administration and result of the test. Joehnk, 35 Cal. App. 4th at 1508, 42 Cal. Rptr. 2d at 18.

III. Purpose and Limits of HGN

HGN may be used, along with other scientific tests, as some evidence that defendant was impaired. Joehnk, 35 Cal. App. 4th at 1508, 42 Cal. Rptr. 2d at 17.
HGN test results may not be used to quantify the BAC level of the defendant. California v. Loomis, 156 Cal. App. 3d Supp. 1, 5-6, 203 Cal. Rptr. 767, 769-70 (1984).

**Connecticut**

I. Evidentiary Admissibility


Also see, Connecticut v. Merritt, 647 A.2d 1021, 1028 (Conn. App. Ct. 1994). HGN must meet the Frye test of admissibility. In this case, the state presented no evidence to meet its burden under the Frye test.

HGN satisfies the Porter standards and is admissible. (In State v. Porter, 698 A.2d 739 (1997), the Connecticut Supreme Court held the Daubert approach should govern the admissibility of scientific evidence and expressed factors to be considered in assessing evidence.) Connecticut v. Carlson, 720 A.2d 886 (Conn. Super. Ct. 1998).

II. Police Officer Testimony Needed to Admit HGN Test Result

Must lay a proper foundation with a showing that the officer administering the test had the necessary qualifications and followed proper procedures. Connecticut v. Merritt, 647 A.2d 1021, 1028 (Conn. App. Ct. 1994).

III. Purpose and Limits of HGN


**Delaware**

I. Evidentiary Admissibility


HGN evidence is acceptable scientific testimony under the Delaware Rules of Evidence. Ruthardt, 680 A.2d at 362.
II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer may be qualified as an expert to testify about the underlying scientific principles that correlate HGN and alcohol. Delaware police receiving three-day (twenty-four hour) instruction on HGN test administration are not qualified to do this. Ruthardt, 680 A.2d at 361-62.

Police officer testimony about training and experience alone, without expert testimony, is not enough foundation to admit HGN test results. Zimmerman v. Delaware, 693 A.2d 311, 314 (Del. 1997).

III. Purpose and Limits of HGN

HGN test results admissible to show probable cause in a criminal hearing. Ruthardt, 680 A.2d at 355.


HGN test results cannot be used to quantify the defendant’s BAC. However, they can be used as substantive evidence that the defendant was “under the influence of intoxicating liquor.” Ruthardt, 680 A.2d at 361-62.

District of Columbia

I. Evidentiary Admissibility

The Court does not address this issue.

II. Police Officer Testimony Needed to Admit HGN Test Result

The Court used the case law of other jurisdictions to come to the conclusion that the Officer in the case could testify as an expert on the administration and the results of the HGN test. Therefore, in this case, the evidence was properly admitted using the Officer as the expert. See Karamychev v. District of Columbia, 772 A. 2d 806 (D.C. App. 2001).

III. Purpose and Limits of HGN

The Court has not yet addressed this issue.
Florida

I. Evidentiary Admissibility

The 3rd District Court found HGN to be a “quasi-scientific” test. Its application is dependent on a scientific proposition and requires a particular expertise outside the realm of common knowledge of the average person. It does not have to meet the Frye standard because HGN has been established and generally accepted in the relevant scientific community, and has been Frye tested in the legal community. The court took judicial notice that HGN is reliable based on supportive case law from other jurisdictions, numerous testifying witnesses and studies submitted. It is “no longer ‘new or novel’ and there is simply no need to reapply a Frye analysis.” Williams v. Florida, 710 So. 2d 24 (Fla. Dist. Ct. App. 1998).

The 4th District Court found HGN to be a scientific test. However, because it is not novel, the Frye standard is not applicable. However, “[e]ven if not involving a new scientific technique, evidence of scientific tests is admissible only after demonstration of the traditional predicates for scientific evidence including the test's general reliability, the qualifications of test administrators and technicians, and the meaning of the results.” Without this predicate, “the danger of unfair prejudice, confusion of issues or misleading the jury from admitting HGN test results outweighs any probative value.” The state did not establish the appropriate foundation for the admissibility of HGN test results. Florida v. Meador, 674 So. 2d 826, 835 (Fla. Dist. Ct. App. 1996), review denied, 686 So. 2d 580 (Fla. 1996).

II. Police Officer Testimony Needed to Admit HGN Test Result

“We take judicial notice that HGN test results are generally accepted as reliable and thus are admissible into evidence once a proper foundation has been laid that the test was correctly administered by a qualified DRE [Drug Recognition Expert].” Williams, 710 So. 2d at 32.

Also see Bown v. Florida, 745 So. 2d 1108 (Fl. Dist. Ct. App. 1999) which expands Williams. Allows trooper to explain HGN, but district requires confirmatory blood, breath or urine test before admitting HGN into evidence.

No evidence presented as to the police officer’s qualifications nor administration of the HGN test in this case. Meador, 674 So. 2d at 835.

III. Purpose and Limits of HGN

The HGN test results alone, in the absence of a chemical analysis of blood, breath, or urine, are inadmissible to trigger the presumption provided by the DUI statute, and may not be used to establish a BAC of .08 percent or more. Williams, 710 So. 2d at 36.
Georgia

I. Evidentiary Admissibility


HGN testing is judicially noticed as a scientifically reliable test and therefore expert testimony is no longer required before the test results can be admitted. Hawkins v. Georgia, 476 S.E.2d 803, 808-09 (Ga. Ct. App. 1996).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer, who received specialized training in DUI detection and worked with a DUI task force for two years, was permitted to testify that, in his opinion, defendant was under the influence. Sieveking v. Georgia, 469 S.E.2d 235, 219-20 (Ga. Ct. App. 1996).

A police officer who testifies to the results, administration, and procedure of HGN may be cross-examined about those areas even if the state only offers him as a POST-certified officer. This is because the analysis and expertise needed for HGN go far beyond those needed by a lay person who observes the walk and turn or one leg stance tests. James v. State, 2003 WL 1540235 (Ga. App.).

III. Purpose and Limits of HGN

HGN test can be admitted to show that the defendant “was under the influence of alcohol to the extent that it was less safe for him to drive.” Sieveking, 469 S.E.2d at 219.

Hawaii

I. Evidentiary Admissibility

HGN is a scientific test. The HGN test is reliable under the Hawaii Rules of Evidence and admissible as “evidence that police had probable cause to believe that a defendant was DUI.” Judicial notice of the “validity of the principles underlying HGN testing and the reliability of HGN test results” is appropriate. HGN test results can be admitted into evidence if the officer administering the test was duly qualified to conduct the test and the test was performed properly. Hawaii v. Ito, 978 P.2d 191 (Haw. Ct. App. 1999).

II. Police Officer Testimony Needed to Admit HGN Test Result

Before HGN test results can be admitted into evidence in a particular case, however, it must be shown that (1) the officer administering the test was duly qualified to conduct
and grade the test; and (2) the test was performed properly in the instant case. Hawaii v. Ito, 978 P.2d 191 (Haw. Ct. App. 1999), See also Hawaii v. Toyomura, 904 P.2d 893, 911 (Haw. 1992) and Hawaii v. Montalbo, 828 P2d. 1274, 1281 (Haw. 1992).

III. Purpose and Limits of HGN

HGN test can be admitted as “evidence that police had probable cause to believe that a defendant was DUI.” Hawaii v. Ito, 978 P.2d 191 (Haw. Ct. App. 1999).

Idaho

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Officer may testify as to administration of HGN test, but not correlation of HGN and BAC. State v. Garrett, 811 P.2d 488, 493 (Idaho 1991).

III. Purpose and Limits of HGN

“HGN test results may not be used at trial to establish the defendant's blood alcohol level. Although we note that in conjunction with other field sobriety tests, a positive HGN test result does supply probable cause for arrest, standing alone that result does not provide proof positive of DUI.” Garrett, 811 P.2d at 493.

HGN may be “admitted for the same purpose as other field sobriety test evidence -- a physical act on the part of [defendant] observed by the officer contributing to the cumulative portrait of [defendant] intimating intoxication in the officer's opinion.” Gleason, 844 P.2d at 695.

Illinois

I. Evidentiary Admissibility

HGN meets Frye standard of admissibility. People v. Buening, 592 N.E.2d 1222, 1227 (Ill. App. Ct. 1992). Despite the ruling of the Buening appellate court, the Fourth District Court of Appeals declined to recognize HGN’s general acceptance without a Frye hearing. The court criticized the Buening court for taking judicial notice of HGN’s reliability based on the

The state supreme court held that the state was no longer required to show than an HGN test satisfied the Frye standard before introducing the results of the test into evidence. Absent proof by the defense that the HGN test was unsound, the State only had to show that the officer who gave the test was trained in the procedure and that the test was properly administered. The People of the State of Illinois v. Linda Basler, 740 N.E.2d 1 (Ill. 2000), 2000 Ill. LEXIS 1698 (Ill. 2000). (Plurality Opinion) According to Fourth Circuit, a Frye hearing must be held for HGN to be admitted. People v. Herring, 762 N.E.2d 1186.

II. Police Officer Testimony Needed to Admit HGN Test Result

“A proper foundation should consist of describing the officer's education and experience in administering the test and showing that the procedure was properly administered.” Buening, 592 N.E.2d at 1227.

III. Purpose and Limits of HGN

HGN test results may be used to establish probable cause in a criminal hearing. People v. Furness, 526 N.E.2d 947, 949 (Ill. App. Ct. 1988).


HGN test results may be used “to prove that the defendant is under the influence of alcohol.” Buening, 592 N.E.2d at 1228.

Indiana

I. Evidentiary Admissibility

Results of properly administered HGN test are admissible to show impairment which may be caused by alcohol and, when accompanied by other evidence, will be sufficient to establish probable cause to believe a person may be intoxicated. Cooper v. Indiana, 751 N.E.2d 900, 903 (Ind. Ct. App. Feb. 2002)

II. Police Officer Testimony Needed to Admit HGN Test Result

The proper foundation for admitting HGN evidence should consist of describing the officer’s education and experience in administering the test and showing that the procedure was properly administered. Cooper, 751 N.E.2d at 903.
The question of whether a trained officer might express an opinion that defendant was intoxicated based upon the results of field sobriety tests was not before the court, and thus, the court expressed no opinion concerning the admissibility of such testimony. Cooper, 751 N.E. 2d at 902, n. 1.

III. Purpose and Limits of HGN

HGN test results, when accompanied by other evidence, will be sufficient to establish probable cause that the person may be intoxicated. Cooper, 751 N.E.2d at 903.

*Iowa*

I. Evidentiary Admissibility

HGN admissible as a field test under the Iowa Rules of Evidence. “[T]estimony by a properly trained police officer with respect to the administration and results of the horizontal gaze nystagmus test are admissible without need for further scientific evidence.” State v. Murphy, 451 N.W.2d 154, 158 (Iowa 1990).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer may testify about HGN test results under Rule 702 if the officer is properly trained to administer the test and objectively records the results. Murphy, 451 N.W.2d at 158.

III. Purpose and Limits of HGN

HGN test results may be used as an indicator of intoxication. Murphy, 451 N.W.2d at 158.

*Kansas*

I. Evidentiary Admissibility

HGN must meet Frye standard of admissibility and a Frye hearing is required at the trial level. There was no Frye hearing conducted and the appellate court refused to make a determination based on the record it had. State v. Witte, 836 P.2d 1110, 1121 (Kan. 1992).

HGN test has not achieved general acceptance within the relevant scientific community and its exclusion was appropriate. State v. Chastain, 960 P.2d 756 (Kan. 1998).
II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court did not address this issue.

_Kentucky_

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court did not address this issue.

_Louisiana_

I. Evidentiary Admissibility

HGN meets Frye standard of admissibility and with proper foundation may be admitted as evidence of intoxication.


The standard of admissibility for scientific evidence is currently the Louisiana Rules of Evidence. State v. Foret, 628 So. 2d 1116 (La. 1993).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer may testify as to training in HGN procedure, certification in the administration of HGN test and that the HGN test was properly administered. Armstrong, 561 So. 2d at 887.
III. Purpose and Limits of HGN

The HGN test may be used by the officer “to determine whether or not he [needs] to ‘go any further’ and proceed with other field tests.” Breitung, 623 So. 2d at 25. HGN test results may be admitted as evidence of intoxication. Armstrong, 561 So. 2d at 887.

Maine

I. Evidentiary Admissibility

Because the HGN test relies on greater scientific principles than other field sobriety tests, the reliability of the test must first be established. Either Daubert or Frye standard must be met. State v. Taylor, 694 A.2d 907, 912 (Me. 1997).

The Maine Supreme Court took judicial notice of the reliability of the HGN test to detect impaired drivers. Taylor, 694 A.2d at 910.

II. Police Officer Testimony Needed to Admit HGN Test Result

“A proper foundation shall consist of evidence that the officer or administrator of the HGN test is trained in the procedure and the [HGN] test was properly administered.” Taylor, 694 A.2d at 912.

III. Purpose and Limits of HGN

HGN test results may only be used as “evidence of probable cause to arrest without a warrant or as circumstantial evidence of intoxication. The HGN test may not be used by an officer to quantify a particular blood alcohol level in an individual case.” Taylor, 694 A.2d at 912.

Maryland

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer must be properly trained or certified to administer the HGN test. [NOTE: In Schultz, the police officer failed to articulate the training he received in HGN testing and the evidence was excluded.] Schultz, 664 A.2d at 77.
III. Purpose and Limits of HGN


Massachusetts

I. Evidentiary Admissibility

HGN is scientific and is admissible on a showing of either general acceptance in the scientific community or reliability of the scientific theory. See Commonwealth v. Lanigan, 641 N.E.2d 1342 (Mass. 1994). HGN test results are inadmissible until the Commonwealth introduces expert testimony to establish that the HGN test satisfies one of these two standards. Commonwealth v. Sands, 675 N.E.2d 370, 373 (Mass. 1997).

II. Police Officer Testimony Needed to Admit HGN Test Result

“There must be a determination as to the qualification of the individual administering the HGN test and the appropriate procedure to be followed.” In this case there was no testimony as to these facts, thus denying the defendant the opportunity to challenge the officer’s qualifications and administration of the test. Sands, 675 N.E.2d at 373.

III. Purpose and Limits of HGN

The Court did not address this issue.

Michigan

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Only foundation necessary for the introduction of HGN test results is evidence that the police officer properly performed the test and that the officer administering the test was qualified to perform it. Berger, 551 N.W.2d at 424.

III. Purpose and Limits of HGN

HGN test results are admissible to indicate the presence of alcohol. Berger, 551 N.W.2d at 424 n.1.
**Minnesota**

I. Evidentiary Admissibility

Court found that HGN meets the Frye standard of admissibility.  
State v. Klawitter, 518 N.W.2d 577, 585 (Minn. 1994).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officers must testify about their training in and experience with the HGN test.  
See generally Klawitter, 518 N.W.2d at 585-86.

III. Purpose and Limits of HGN

HGN admissible as evidence of impairment as part of a Drug Evaluation Examination in the prosecution of a person charged with driving while under the influence of drugs.  
See generally Klawitter, 518 N.W.2d at 585.

**Mississippi**

I. Evidentiary Admissibility

HGN is a scientific test.  However, it is not generally accepted within the relevant scientific community and is inadmissible at trial in the State of Mississippi.  
Young v. City of Brookhaven, 693 So.2d 1355, 1360-61 (Miss. 1997).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officers cannot testify about the correlation between the HGN test and precise blood alcohol content.  Young, 693 So.2d at 1361.

III. Purpose and Limits of HGN

HGN test results are admissible only to prove probable cause to arrest.  
Young, 693 So.2d at 1361.

HGN test results cannot be used as scientific evidence to prove intoxication or as a mere showing of impairment.  Young, 693 So.2d at 1361.
Missouri

I. Evidentiary Admissibility

Court found that HGN test meets the Frye standard of admissibility. State v. Hill, 865 S.W.2d 702, 704 (Mo. Ct. App. 1993), rev’d on other grounds, State v. Carson, 941 S.W.2d 518, 520 (Mo. 1997).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer must be adequately trained and able to properly administer the test. Hill, 865 S.W.2d at 704.

See also, Duffy v. Director of Revenue, 966 S.W. 2d 372 (Mo. Ct. App. 1998). HGN not admitted at trial because the administering officer was not aware of hot to properly score the test and interpret its results.

III. Purpose and Limits of HGN

HGN can be admitted as evidence of intoxication. Hill, 865 S.W.2d at 704.

Montana

I. Evidentiary Admissibility

Court found that HGN is neither new nor novel; thus, Daubert does not apply. Court still finds that HGN must meet the state’s rules of evidence that are identical to the Federal Rules of Evidence. Hulse v. DOJ, Motor Vehicle Div., 961 P.2d 75, 88 (Mont. 1998).

II. Police Officer Testimony Needed to Admit HGN Test Result

The court held that before an arresting officer may testify as to HGN results, a proper foundation must show that the officer was properly trained to administer the HGN test and that he administered the test in accordance with this training. Before the officer can testify as to the correlation between alcohol and nystagmus, a foundation must be established that the officer has special training in the underlying scientific basis of the HGN test. Hulse, 961 P.2d 75 (Mont. 1998).

See Also, State v. Crawford, 315 Mont. 480, 68 P.3d 848 (2003), in which the court ruled that the officer’s credentials were sufficient to establish his expertise, along with evidence that he was previously qualified as an expert. They relied on Russette (2002 MT 200), stating that to establish an expert’s qualifications, the proponent of the testimony must show that the expert has special training or education and adequate knowledge on which to base an opinion.
III. Purpose and Limits of HGN

HGN test results admissible as evidence of impairment. State v. Clark, 762 P.2d 853, 856 (Mont. 1988).

Nebraska

I. Evidentiary Admissibility

HGN meets the Frye standard for acceptance in the relevant scientific communities, and when the test is given in conjunction with other field sobriety tests, the results are admissible for the limited purpose of establishing impairment that may be caused by alcohol. State v. Baue, 607 N.W.2d 191 (Neb. 2000)

II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer may testify to the results of HGN testing if it is shown that the officer has been adequately trained in the administration and assessment of the HGN test and has conducted the testing and assessment in accordance with that training. State v. Baue, 607 N.W.2d 191 (Neb. 2000)

III. Purpose and Limits of HGN

“Testimony concerning HGN is admissible on the issue of impairment, provided that the prosecution claims no greater reliability or weight for the HGN evidence than it does for evidence of the defendant's performance on any of the other standard field sobriety tests, and provided further that the prosecution makes no attempt to correlate the HGN test result with any particular blood-alcohol level, range of blood-alcohol levels, or level of impairment.” State v. Baue, 607 N.W.2d 191 (Neb. 2000) (quoting Ballard v. State, 955 P.2d 931, 940 (Alaska App. 1998))

New Hampshire

I. Evidentiary Admissibility

In State v. Dahoo (Dec. 20, 2002), the N.H. Supreme Court ruled that the HGN test is admissible under N.H. Rule of Evidence 702 and Daubert for the limited purpose of providing circumstantial evidence of intoxication. HGN test is a scientifically reliable and valid test.

N.H. Supreme Court ruled their findings binding in Dahoo and that courts “will not be required to establish the scientific reliability of the HGN.”
II. Police Officer Testimony Needed to Admit HGN Test Result

“Since we have already determined that the scientific principles underlying the HGN test are reliable, a properly trained and qualified police officer may introduce the HGN test results at trial.” State v. Dahoo, 2002 N.H. LEXIS 179.

III. Purpose and Limits of HGN

“HGN results cannot be introduced at trial for the purpose of establishing a defendant’s BAC level[]. The results are not sufficient alone to establish intoxication.” State v. Dahoo, Id.

New Jersey

I. Evidentiary Admissibility

In New Jersey, the party offering the results of a scientific procedure into evidence must comply with Frye and show that the procedure is generally accepted in the relevant scientific communities. A party may prove this general acceptance via “(1) testimony of knowledgeable experts[,] (2) authoritative scientific literature[,] or (3) [p]ersuasive judicial decision.” Based on the testimony of Dr. Marcelline Burns and Dr. Jack Richman, the Court found the HGN test to be generally accepted and the results thus admissible. The Court also noted the “significant number” of jurisdictions that have accepted the HGN test as admissible scientific evidence. State v. Maida, 2000 N.J. Super. LEXIS 276 (N.J. Super. Ct. Law Div. 2000).

*But See, State v. Doriguzzi, 760 A.2d 336 (N.J. Super. 2000), which held that HGN is scientific evidence that must meet Frye Standard. However, in each trial, sufficient foundation evidence must be laid by expert testimony to assure defendants that a conviction for DUI, when based in part on HGN testing, is grounded in reliable scientific data. In this case, the appellate court reversed defendant’s conviction because at trial no such foundation was presented. The court found that because HGN testing has not achieved general acceptance in the community, it is not a matter of which a court can take judicial notice.

II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court found the HGN test admissible “as a reliable scientific indicator of likely intoxication.”
New Mexico

I. Evidentiary Admissibility

HGN is a scientific test. New Mexico follows the Daubert standard, which requires a showing of reliability before scientific evidence can be admitted. The court held that a scientific expert must testify to the underlying scientific reliability of HGN and that a police officer cannot qualify as a scientific expert. Because the State failed to present sufficient evidence regarding the HGN test’s reliability, the court remanded the case stating it would be appropriate for the trial court, on remand, to make the initial determination of whether HGN testing satisfies Daubert. In addition, the court found HGN to be “beyond common and general knowledge” and declined to take judicial notice of HGN reliability.

State v. Lasworth, 42 P.3d 844 (Ct. App. N.M. 2001), cert. denied (2002). Results of HGN test were inadmissible at trial (State v. Torres, 976 P.2d 20 (N.M. 1999). The State needed to prove that HGN was both valid and reliable.

State called Dr. Marceline Burns as a witness (reliability) but did not call an expert in a discipline such as biology or medicine to explain how the amount of alcohol a person consumes correlates with HGN (validity).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officers can qualify as non-scientific experts based on their training and experience. Non-scientific experts may testify about the administration of the test and specific results of the test provided another scientific expert first establishes the reliability of the scientific principles underlying the test. In order to establish the “technical or specialized knowledge” required to qualify as an expert in the administration of the HGN test, “there must be a showing: (1) that the expert has the ability and training to administer the HGN test properly, and (2) that the expert did, in fact, administer the HGN test properly at the time and upon the person in question.” State v. Torres, 976 P.2d 20 (N.M. 1999).

State v. Lasworth, 42 P.3d 844 (Ct. App. N.M. 2001), cert. denied (2002). Court believed that state had to show that presence of HGN (BAC above .08) correlates with diminishment of driver’s mental or physical driving skills (which it failed to do) & a correlation between presence of HGN and BAC above or below .08 (which it did through testimony of Dr. Burns). Court did not preclude use of results of HGN to establish probable cause for arrest or to establish grounds for administering a chemical BAC test.

III. Purpose and Limits of HGN

The Court did not address this issue.
**New York**

I. Evidentiary Admissibility

Prue holds that HGN test results are admissible under Frye standard of “general acceptance.” People v. Prue, Indictment No. I-5-2001, Franklin County Court (November 2001).

In Gallup, the court said that it was only necessary to conduct a foundational inquiry into the techniques and the tester’s qualifications for admissibility. People v. Gallup, Memorandum and order #13094, 302 A.D.2d 681 (3rd Dept)( 2003).

The Court allowed the introduction of HGN and the results because it was properly administered and the burden of establishing that HGN is a reliable indicator of intoxication is generally accepted in the relevant scientific community was satisfied. People v. William Miley, NYLJ 12/6/02 p.30 col. 6 (Nassau Co. Ct 2002).

II. Police Officer Testimony Needed to Admit HGN Test Result

The People must lay a proper evidentiary foundation in order for HGN results to be admissible at trial.

III. Purpose and Limits of HGN

The Court held that HGN is generally accepted in the relevant scientific community as a reliable indicator of intoxication.

**North Carolina**

I. Evidentiary Admissibility

HGN is a scientific test. It “does not measure behavior a lay person would commonly associate with intoxication but rather represents specialized knowledge that must be presented to the jury by a qualified expert.” As a result, “until there is sufficient scientifically reliable evidence as to the correlation between intoxication and nystagmus, it is improper to permit a lay person to testify as to the meaning of HGN test results.” State v. Helms, 504 S.E.2d 293 (N.C. 1998).

II. Police Officer Testimony Needed to Admit HGN Test Result

Testimony of one police officer, whose training consisted of a “forty hour training class dealing with the HGN test”, was inadequate foundation for admission of HGN test results. Helms, 504 S.E.2d 293 (N.C. 1998).
III. Purpose and Limits of HGN

HGN test results are evidence of impairment. Helms, 504 S.E.2d 293 (N.C. 1998).

North Dakota

I. Evidentiary Admissibility

Court found that HGN test is admissible as a standard field sobriety test. City of Fargo v. McLaughin, 512 N.W.2d 700, 706 (N.D. 1994).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer must testify as to training and experience and that the test was properly administered. City of Fargo, 512 N.W.2d at 708.

III. Purpose and Limits of HGN

“. . . HGN test results admissible only as circumstantial evidence of intoxication, and the officer may not attempt to quantify a specific BAC based upon the HGN test.” City of Fargo, 512 N.W.2d at 708.

Ohio

I. Evidentiary Admissibility


Court determined that HGN was a reliable indicator of intoxication without specifically ruling on whether HGN meets Frye or some other standard of admissibility. State v. Bresson, 554 N.E.2d 1330, 1334 (Ohio 1990).

Court held that SFSTs, including HGN, must be administered in strict compliance with NHTSA’s directives in order for the test results to be admissible. State v. Homan, 732 N.E.2d 952 (Ohio 2000).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer need only testify to training in HGN procedure, knowledge of the test and ability to interpret results. Bresson, 554 N.E.2d at 1336.
III. Purpose and Limits of HGN

HGN can be used to establish probable cause to arrest and as substantive evidence of a defendant's guilt or innocence in a trial for DUI, but not to determine defendant's BAC. Bresson, 554 N.E.2d at 1336.

Oklahoma

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer testified to training on how to administer HGN test and how the test was administered in this case. Officer also testified as to his training in analyzing HGN test results. Yell, 856 P.2d at 997.

III. Purpose and Limits of HGN

If HGN testing was found to satisfy the Frye standard of admissibility, HGN test results would be considered in the same manner as other field sobriety test results. HGN test results are inadmissible as scientific evidence creating a presumption of intoxication. Yell, 856 P.2d at 997.

Oregon

I. Evidentiary Admissibility

HGN test results are admissible under the Oregon Rules of Evidence. HGN test results are scientific in nature, are relevant in a DUI trial, and are not unfairly prejudicial to the defendant. State v. O'Key, 899 P.2d 663, 687 (Or. 1995).

II. Police Officer Testimony Needed to Admit HGN Test Result

"Admissibility is subject to a foundational showing that the officer who administered the test was properly qualified, that the test was administered properly, and that the test results were recorded accurately." O'Key, 899 P.2d at 670.
III. Purpose and Limits of HGN

“HGN test results are admissible to establish that a person was under the influence of intoxicating liquor, but is not admissible to establish a person’s BAC.”
O'Key, 899 P.2d at 689-90.

Officer may not testify that, based on HGN test results, the defendant’s BAC was over .10.

Pennsylvania

I. Evidentiary Admissibility

The state laid an inadequate foundation for the admissibility of HGN under the Frye/Topa standard.

Testimony of police officer is insufficient to establish scientific reliability of HGN test.
Moore, 635 A.2d at 692.
Miller, 532 A.2d at 1189-90.

Testimony of behavioral optometrist did not establish general acceptance of HGN test.
Apollo, 603 A.2d at 1027-28.

II. Police Officer Testimony Needed to Admit HGN Test Result

County detective certified as HGN instructor. Court did not comment on whether this would be enough foundation to allow the detective to testify about HGN test results.
Moore, 635 A.2d 629.

Police officer had one-day course on HGN. Court did not comment on whether this would be enough foundation to allow the officer to testify about HGN test results.
Miller, 603 A.2d at 1189.

III. Purpose and Limits of HGN

Not addressed by court.
South Carolina

I. Evidentiary Admissibility

HGN admissible in conjunction with other field sobriety tests. By implication, HGN is not regarded as a scientific test. State v. Sullivan, 426 S.E.2d 766, 769 (S.C. 1993).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer given twenty hours of HGN training. Sullivan, 426 S.E.2d at 769.

III. Purpose and Limits of HGN

HGN test results admissible “to elicit objective manifestations of soberness or insobriety . . . Evidence from HGN tests is not conclusive proof of DUI. A positive HGN test result is to be regarded as merely circumstantial evidence of DUI. Furthermore, HGN test shall not constitute evidence to establish a specific degree of blood alcohol content.” Sullivan, 426 S.E.2d at 769.

South Dakota

I. Evidentiary Admissibility

If it can be shown that a horizontal gaze nystagmus test was properly administered by a trained officer, such evidence should be admitted for a jury to consider at trial along with evidence of the other accepted field sobriety tests administered in South Dakota. STATE v. HULLINGER, 2002 SD 83; 649 N.W.2d 253 (S.D.S.Ct. 2002); 2002 S.D. LEXIS 99

II. Police Officer Testimony Needed to Admit HGN Test Result

Officer may testify if properly trained and test properly administered. At the pretrial hearing, the State presented three witnesses: 1) Monte Farnsworth, training director for the Office of Highway Safety at the Division of Criminal Investigation Law Enforcement Training Academy; 2) Deputy Ludwig; and 3) Dr. Larry Menning, optometrist and expert witness. South Dakota follows a Daubert standard in use of expert witnesses.

III. Purpose and Limits of HGN

The Court did not address this issue.
Tennessee

I. Evidentiary Admissibility

HGN is a scientific test. To be admissible at trial, such evidence must satisfy the requirements of Tenn. Rules of Evidence 702 and 703. State provided an inadequate amount of evidence to allow the court to conclude that HGN evidence meets this standard.  
State v. Murphy, 953 S.W.2d 200 (Tenn. 1997).

II. Police Officer Testimony Needed to Admit HGN Test Result

HGN must be offered through an expert witness. To qualify as an expert, a police officer must establish that he is qualified by his “knowledge, skill, experience, training or education” to provide expert testimony to “substantially assist the trier of fact to understand the evidence or determine a fact in issue.” Although the court did not rule out the possibility that the officer can be considered an expert, the court set a high level of proof. In this case, the court felt that although the officer had attended law enforcement training in DUI offender apprehension and the HGN test, this training was not enough to establish him as an expert.  State v. Grindstaff, 1998 Tenn. Crim. App. Lexis 339 (March 23, 1998).

III. Purpose and Limits of HGN

The Court did not address this issue.

Texas

I. Evidentiary Admissibility

HGN admissible under the Texas Rules of Evidence.  

II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer must qualify as an expert on the HGN test, specifically concerning its administration and technique, before testifying about a defendant’s performance on the test. Proof that the police officer is certified in the administration of the HGN test by the Texas Commission on Law Enforcement Officer Standards and Education satisfies this requirement.  Emerson, 880 S.W.2d at 769.

III. Purpose and Limits of HGN

HGN admissible to prove intoxication, but not accurate enough to prove precise BAC.  
Emerson, 880 S.W.2d at 769.
**Utah**

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer need only testify as to training, experience and observations when HGN admitted as a field test. Garcia, 912 P.2d at 1001.

III. Purpose and Limits of HGN

Admissible as any other field sobriety test. Garcia, 912 P.2d at 1000-01.

**Washington**

I. Evidentiary Admissibility

It is “undisputed” in the relevant scientific communities that “an intoxicated person will exhibit nystagmus”. HGN testing is not novel and has been used as a field sobriety test for “decades” and is administered the same whether investigating alcohol impairment or drug impairment. Thus, the use of HGN in drug and alcohol impaired driving cases is acceptable. State v. Baity, 140 Wn.2d 1, 991 P.2d 1151 (Wash. 2000).

“[T]he Frye standard applies to the admission of evidence based on HGN testing, unless . . . the State is able to prove that it rests on scientific principles and uses techniques which are not ‘novel’ and are readily understandable by ordinary persons.” The state failed to present any evidence to this fact and the court declined to take judicial notice of HGN. State v. Cissne, 865 P.2d 564, 569 (Wash. Ct. App. 1994).

II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court did not address this issue.
West Virginia

I. Evidentiary Admissibility

The state did not present evidence for the court to reach “the question of whether the HGN test is sufficiently reliable to be admissible.” However, the court did conclude “that even if the reliability of the HGN test is demonstrated, an expert’s testimony as to a driver’s performance on the test is admissible only as evidence that the driver was under the influence. Estimates of blood alcohol content based on the HGN test are inadmissible.” State v. Barker, 366 S.E.2d 642, 646 (W. Va. 1988).


II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer's training consisted of a one-day, eight-hour training session conducted by the state police. Officer testified to giving the HGN test about 100 times. Court did not reach question of whether this would be enough to allow the officer to testify about the HGN test results. Barker, 366 S.E.2d at 644.

III. Purpose and Limits of HGN


“If the reliability of the HGN test is demonstrated, an expert's testimony as to a driver's performance on the test is admissible only as evidence that the driver was under the influence,” the same as other field sobriety tests. Barker, 366 S.E.2d at 646.

Wisconsin

I. Evidentiary Admissibility

The court held that the HGN test results are admissible in this case because the test results were not the only evidence. The results were accompanied by the expert testimony of the officer. State v. Zivcic, 598 N.W.2d 565 (Wisc. Ct. App. 1999). See also, State v. Maxon, 633 N.W. 2d 278 (Wisc. Ct. App. 2001)
II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer who is properly trained to administer and evaluate the HGN test can testify to the test results. A second expert witness is not needed. State v. Zivcic, 598 N.W.2d 565 (Wisc. Ct. App. 1999).

III. Purpose and Limits of HGN

The Court did not address this issue.

Wyoming

I. Evidentiary Admissibility

SFSTs, including HGN, are admissible to establish probable cause when administered in substantial compliance with NHTSA guidelines. Strict compliance is not necessary. The court took judicial notice of the number of states that allow HGN evidence on the basis of the “officer’s training, experience and ability to administer the test”. Smith v. Wyoming, 2000 Wyo. LEXIS 202 (Wyo. October 4, 2000).

II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer that is properly trained to administer and evaluate the HGN test can testify to HGN results. Smith v. Wyoming, 2000 Wyo. LEXIS 202 (Wyo. October 4, 2000).

III. Purpose and Limits of HGN


United States

I. Evidentiary Admissibility

U.S. V. Eric D. Horn, 185 F. Supp. 2d 530 (D. Maryland 2002) In this case, U.S. District Court in Maryland made the first application of the newly revised FRE 702 to the HGN and other SFSTs.

Results of properly administered WAT, OLS and HGN, SFSTs may be admitted into evidence in a DWI/DUI case only as circumstantial evidence of intoxication or impairment but not as direct evidence of specific BAC.

Officer must first establish his qualifications to administer the test - training and
experience, not opinion about accuracy rate of test or causal connection between alcohol consumption and exaggerated HGN.

Government may prove causal connection by: judicial notice, expert testimony, or learned treatise. Horn may prove other causes by: judicial notice, cross-examination of state’s expert, defense expert, or learned treatise.

U.S. V. Daras, 1998 WL 726748 (4th Cir. 1998)(Unpublished opinion). WAT and OLS were not scientific so no expert needed. Court would have applied Daubert to HGN test, but there was no need to because breathalyzer, WAT and OLS were sufficient.

HGN test was admitted as part of series of field tests. Its admission was not challenged on appeal. U.S. v. Van Griffin, 874 F.2d 634 (9th Cir. 1989).

II. Police Officer Testimony Needed to Admit HGN Test Result

Foundation for HGN must address validity & reliability under FRE 702. In Horn, prosecution had a medical doctor and a police officer, but defense used behavioral psychologist to attack HGN literature of Dr. Marceline Burns and others.

III. Purpose and Limits of HGN

SFSTs may be admitted into evidence in a DWI/DUI case only as circumstantial evidence of intoxication or impairment but not as direct evidence of specific BAC. Horn.

Properly qualified, Officer may give opinion of intoxication or impairment by alcohol. Horn.

Note: The following states were not listed above due to a lack of case law discussion on HGN:
Colorado
Nevada
Rhode Island
Vermont (HGN was mentioned in the context of a refusal being admissible as evidence of probative guilt. State v. Blouin, 168 Vt. 119 (Vt. 1998)
Virginia

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1. Anderson, Schweitz & Snyder, Field Evaluation of Behavioral Test Battery for DWI, U.S. Dept. of Transportation Rep. No. DOT HS 806 475 (1983) (field evaluation of the Standardized Field Sobriety Test battery (HGN, one leg stand, and walk and turn) conducted by police officers from four jurisdictions indicated that the battery was approximately 80% effective in determining BAC above and below .10 percent).

2. Aschan, Different Types of Alcohol Nystagmus, 140 ACTA OTOLARYNGOL SUPP. 69 (Sweden 1958) (“From a medico legal viewpoint, simultaneous recording of AGN (Alcohol Gaze Nystagmus) and PAN (positional alcoholic nystagmus) should be of value, since it will show in which phase the patient’s blood alcohol curve is...”).


4. Aschan, Bergstedt, Goldberg & Laurell, Positional Nystagmus in Man During and After Alcohol Intoxication, 17 Q.J. OF STUD. ON ALCOHOL, Sept. 1956, at 381. Study distinguishing two types of alcohol induced nystagmus, PAN (positional alcoholic nystagmus) I and PAN II, found intensity of PAN I, with onset about one half hour after alcohol ingestion, was proportional to amount of alcohol taken.


6. Barnes, The Effects of Ethyl Alcohol on Visual Pursuit and Suppression of the Vestibulo Ocular Reflex, 406 ACTA OTOLARYNGOL SUPP. 161 (Sweden 1984) (ethyl alcohol disrupted visual pursuit eye movement by increasing number of nystagmic "catch up saccades").

7. Burns & Moskowitz, Psychophysical Tests for DWI Arrest, U.S. Dept. of Transportation Rep. No. DOT HS 802 424 (1977) (recommended the three test battery developed by SCRI (one leg stand, walk and turn, and HGN) to aid officers in discriminating BAC level).

8. Burns, The Robustness of the Horizontal Gaze Nystagmus (HGN) Test, U.S. Dept. of Transportation 2004. Concludes that HGN as used by law enforcement is a robust procedure and the data obtained in this report does not support changes or revisions to the current testing or procedure.

10. Citek, Ball and Rutledge, Nystagmus Testing in Intoxicated Individuals, Vol. 74, No. 11, Nov. 2003, Optometry, established that the HGN test administered in the standing, seated, and supine postures is able to discriminate impairment at criterion BAC’s of 0.08% and 0.10%.

11. Compton, Use of the Gaze Nystagmus Test to Screen Drivers at DWI Sobriety Checkpoints, U.S. Dept. of Transportation (1984) (field evaluation of HGN test administered to drivers through car window in approximately 40 seconds: "the nystagmus test scored identified 95% of the impaired drivers" at 2; 15% false positive for sober drivers, id.).


13. Goldberg, Effects and After Effects of Alcohol, Tranquilizers and Fatigue on Ocular Phenomena, ALCOHOL AND ROAD TRAFFIC 123 (1963) (of different types of nystagmus, alcohol gaze nystagmus is the most easily observed).

14. Helzer, Detection DUIs Through the Use of Nystagmus, LAW AND ORDER, Oct. 1984, at 93 (nystagmus is "a powerful tool for officers to use at roadside to determine BAC of stopped drivers...(O)fficers can learn to estimate BACs to within an average of 0.02 percent of chemical test readings." Id. at 94).

15. L.R. Erwin, DEFENSE OF DRUNK DRIVING CASES (3d ed. 1985) ("A strong correlation exists between the BAC and the angle of onset of (gaze) nystagmus." Id. at 8.15A(3).


17. Misoi, Hishida & Maeba, Diagnosis of Alcohol Intoxication by the Optokinetic Test, 30 Q.J. OF STUD. ON ALCOHOL 1 (March June 1969) (optokinetic nystagmus, ocular adaptation to movement of object before eyes, can also be used to detect central nervous system impairment caused by alcohol. Optokinetic nystagmus is inhibited at BAC of only .051 percent and can be detected by optokinetic nystagmus
test. Before dosage subjects could follow a speed of 90 degrees per second; after, less than 70 degrees per second).


20. Norris, The Correlation of Angle of Onset of Nystagmus With Blood Alcohol Level: Report of a Field Trial, CALIF. ASSN CRIMINALISTICS NEWSLETTER, June 1985, at 21 (The relationship between the ingestion of alcohol and the inset of various kinds of nystagmus "appears to be well documented." Id. "While nystagmus appears to be useful as a roadside sobriety test, at this time, its use to predict a person's blood alcohol level does not appear to be warranted." Id. at 22).


22. Oosterveld, Meineri & Paolucci, Quantitative Effect of Linear Acceleration on Positional Alcohol Nystagmus, 45 AEROSPACE MEDICINE, July 1974, at 695 (G-loading brings about PAN even when subject has not ingested alcohol; however when subjects ingested alcohol, no PAN was found when subjects were in supine position, even with G force at 3).


27. Savolainen, Riihimaki, Vaheri & Linnoila, Effects of Xylene and Alcohol on Vestibular and Visual Functions in Man, SCAND. J. WORK ENVIRON. HEALTH 94 (Sweden 1980) (abstract available on DIALOG, file 172: Embase 1980 81 on file 5: Biosis Previews 1981 86) (the effects of alcohol on vestibular functions (e.g., positional nystagmus) were dose dependent).

28. Seelmeyer, Nystagmus, A Valid DUI Test, LAW AND ORDER, July 1985, at 29 (Horizontal Gaze Nystagmus test is used in "at least one law enforcement agency in each of the 50 states" and is "a legitimate method of establishing probable cause." Id.).


30. Tharp, Burns & Moskowitz, Circadian Effects on Alcohol Gaze Nystagmus (paper presented at 20th annual meeting of Society for Psychophysiological Research), abstract in 18 PSYCHOPHYSIOLOGY, March 1981 (highly significant correlation between angle of onset of AGN and BAC).

31. Tharp, Burns & Moskowitz, Development and Field Test of Psychophysical Tests for DWI Arrests, U.S. Dept. of Transportation Rep. No. DOT HS 805 864 (1981) (standardized procedures for administering and scoring the SCRI three test battery; participating officers able to classify 81% of volunteers above or below .10).

32. Umeda & Sakata, Alcohol and the Oculomotor System, 87 ANNALS OF OTOLOGY, RHINOLOGY & LARYNGOLOGY, May June 1978, at 392 (in volunteers whose "caloric eye tracking pattern" (CETP) was normal before alcohol intake, influence of alcohol on oculomotor system appeared consistently in the following order: (1) abnormality of CETP, (2) positional alcohol nystagmus, (3) abnormality of eye tracking pattern, (4) alcohol gaze nystagmus).
