E40   The DUI HGN Test: A Forensic Look at the NHTSA's HGN Robustness Study

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After attending this presentation, attendees will understand the importance of conducting a proper Horizontal Gaze Nystagmus (HGN) test in Driving Under the Influence (DUI) investigative cases.

This presentation will impact the forensic science community by reinforcing the necessity of conducting a proper DUI HGN test in the prescribed standardized manner to avoid false positive results.

The HGN test is a pre-arrest exam utilized by law enforcement in the United States of America. It is a component of a three battery testing procedure also including a nine step walk and turn test and a one leg stand test. These three components are collectively referred to as the "Standardized Field Sobriety Tests" or SFST.[1]

The SFST's are taught to law enforcement officers nationwide as a means to "standardize" the investigation of those motorists who are suspected of have having driven an automobile with an unlawful BAC.

The SFST's were developed in the Southern California Research Institute over 30 years ago with periodic updates published by the United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA).[2]

The HGN test is described to law enforcement as "the involuntary jerking of the eyes" as they move from side to side and are further taught that if the HGN test is performed correctly revealing four or more clues that HGN is 77% accurate in predicting that a motorist's blood alcohol concentration is over 0.10%. A stimulus (often a pen or finger) is held between twelve to fifteen inches from the face at slightly above eye level.

The standardized procedures for the administration of the HGN test begins with screening the motorist for certain pathological disorders that include brain damage or diseases of the middle ear by looking for equal pupil size, resting nystagmus, and equal tracking (eyes following an object together).

The HGN test is then scored for a total of three clues per eye for a total of six clues.

The first component is checking the eyes for "the lack of smooth pursuit" by moving the stimulus two seconds out and two seconds back for each eye and then repeating the sequence to determine if the motorist's eyes are able to pursue the stimulus smoothly.

Next the motorists eyes are checked for "distinct and sustained nystagmus are maximum deviation" by holding the stimulus all the way across the motorist's face and holding that position a minimum of four seconds to observe the eye for distinct and sustained nystagmus. Both eyes are to be checked twice.

The third HGN test step requires the officer to check for "onset of nystagmus prior to forty-five degrees" by moving the stimulus at a speed of approximately four seconds to reach the edge of the motorist's shoulder. When HGN is observed the officer is told to stop and verify that the jerking continues. Again, both eyes are checked twice.

The NHTSA training manual emphasizes that the validation of the SFST's applies only when: "The tests are administered in the prescribed standardized manner."

A study of officers performing HGN tests on motorists being investigated for DUI revealed that in only one out of fifty two occurrences the HGN test was performed correctly.[3] The statistical evaluation of NHTSA's 1998 report "Validation of the Standardized Field Sobriety Test Battery at BAC's Below 0.10%" concluded that, "The accuracy is substantially less for individuals with lower alcohol levels."[4]

An improperly administered HGN test creates a conflict between forensic science, law and public policy. When the HGN test has been compromised the government often endeavors to still justify the test results. Too often law enforcement or the prosecution attempts to minimize the flawed HGN test by extolling the statistics of the approved standardized test.

The NHTSA report, "*The Robustness of the Horizontal Gaze Nystagmus Test*" states that, "HGN as used by law enforcement is a robust procedure. The study findings provide no basis for concluding that the validity of the HGN is compromised by minor procedural variations."[5]

An evaluation of the "HGN Robustness Study" as applied to potential motorists .080% BAC or below will be presented. This evaluation reveals a high false positive result per the NHTSA SFST training received by police officers in relation to an arrest decision at 0.08% based on four or more ovseried HGN test clues.

References:

1. Tharp V, Burns M, and Moskowitz H., Development and Field Test of Psychophysical Tests for DWI Arrest. DOT-HS-805-864. National Technical Information Service, Washington, D.C., 1981
2. Burns M and Moskowitz H., Psychophysical Tests for DWI Arrest, DOT-HS- 802-424 National Technical Information Service, Washington, D.C., 1977
3. Booker JL, End-positional nystagmus as an indicator of ethanol intoxication, Science & Justice 2001: 41(2): 113-116
4. Hlastala M, Polissar N, Oberman S, Statistical Evaluation of Standardized Field Sobriety Tests, J Forensic Science, May 2005, Vol 50, No. 3

5. Burns M, The Robustness of the Horizontal Gaze Nystagmus Test. DTNH22-98-D-55079. National Technical Information Service, Washington, D.C., 2007

Alcohol, SFST, HGN