

## **Field Sobriety Test Review**

### **What are field sobriety tests?**

Field sobriety tests are methods for assessing a person's mental and/or physical impairment. Some of the tests are considered divided attention tests because they require the individual to divide his/her ability between retaining and adhering to simple instructions and performing simple instructions. This means that a person will have to perform two tasks at one time. Impaired individuals have difficulty dividing their attention.

### **What do you mean by divided attention tests?**

The test requires the suspect to divide attention among mental and physical tasks. In driving, this equates to looking forward, in the mirrors, watching the speedometer, braking, etc., at the same time.

### **Why is this important?**

Divided attention capabilities are important because most intoxicated people can concentrate on one task, such as standing straight. They exhibit their intoxication when forced to concentrate on two or more different tasks. For example, an intoxicated person may see a child stepping out into the street in front of them, but would have trouble estimating the distance to the child and difficulty applying the brakes. Another example involves NHTSA's 1/2-inch heel to toe requirement on the walk and turn. This can be equated to missing the brake pedal by ½ inch when attempting to brake.

### **Is driving an automobile a multi-tasked function?**

Yes, a driver engages in many tasks at once, such as controlling speed, keeping the car in its lane, keeping an eye on other traffic, monitoring speed, etc.

### **Are field sobriety tests simple or complex tasks?**

Simple. NHTSA performed these tests on hundreds of people: young and old, athletes and couch potatoes, large and skinny, tired and alert, etc. This group of normal people could pass the test within NHTSA guidelines when sober, but could not when intoxicated.

### **Does fatigue affect a person's ability to perform these tests?**

Fatigue does not have a significant effect on a person's ability to perform these tests. In any case, a highly trained officer will take into consideration the subject's tiredness and give the subject the benefit of the doubt.

**N.H.T.S.A.** stands for the National Highway Traffic Safety Administration.

## Horizontal Gaze Nystagmus

See *NHTSA SFST Participant Manual Session 8-37*<sup>[1]</sup>

There are six clues total or three in each eye.

1. Lack of smooth pursuit
2. Distinct and sustained nystagmus at maximum deviation
3. Onset of nystagmus prior to 45 degrees

**Decision Point:** If the subject exhibits 4 or more clues, the inference is that the subject's BAC is above 0.08 and impaired.

Nystagmus is a jerking of the eye or a bouncing eye motion caused by multiple factors. It is displayed in either pendular form where the eye oscillates equally in two directions, or jerk form where the eye moves slowly away from a fixated point and then rapidly corrects back to the fixated point by a fast movement or saccade.

There are 47 different types of nystagmus. Caffeine and nicotine are stimulants. Stimulants do not create or make HGN visible to the naked eye. There is no evidence that smoke causes HGN.

Horizontal Gaze Nystagmus (HGN) is a specific form of jerk nystagmus where the eye's saccadic movement is towards the direction of the gaze. HGN is an involuntary motion that is not controlled by the subject. **Only 2 things cause Horizontal Gaze Nystagmus:** The DID Drugs (Depressants, Inhalants, and Dissociative Anesthetics) and Serious Brain Stem Injury. See *NHTSA SFST Participant Manual Session 8-23*<sup>[1]</sup>

### Categories of nystagmus.

#### ***Vestibular system nystagmus.***

The vestibular system is the system of fluid-filled canals located in the inner ear that assists in balance, coordination, and orientation. Positional Alcohol Nystagmus, discussed below, is a form of vestibular system nystagmus. However, there are several non-alcohol related vestibular system nystagmus types. See *NHTSA SFST Participant Manual Session 8-20*.<sup>[1]</sup>

- **Rotational:** Nystagmus occurs when an individual is spun around rapidly causing the fluid in the inner ear to be disturbed. This cannot happen at roadside. *Only occurs while the person is spinning!*
- **Post Rotational:** Nystagmus is present when an individual stops spinning because the fluid in the inner ear remains disturbed for a period of time. *These types of nystagmus only last for a few seconds and will not interfere with the HGN test.*
- **Caloric:** Nystagmus is caused by movement of inner ear fluid due to a difference in temperature of the fluid between the left and right ear. *This occurs by putting warm water in one ear and cold water in the other. This is not a practice of law enforcement.*

### ***Positional alcohol nystagmus.***

Nystagmus occurs when a foreign fluid, such as alcohol, alters the specific gravity of the blood in unequal concentrations in the blood and the vestibular system. If the subject's head is uneven and he has fluid inequity, this nystagmus may occur. For this reason, the head is held straight (note that the person can be standing, seated, or supine for the HGN test).

*You will ALMOST NEVER see Positional Alcohol Nystagmus in the field. The only way you will is if the defendant is lying down on a backboard and you turn his head to the side. The action of turning the head will induce Positional Alcohol Nystagmus. See NHTSA SFST Participant Manual Session 8-20.<sup>[1]</sup>*

Note: In the original HGN study, research was not conducted for performing HGN on people lying down. Current research demonstrates that HGN can be performed on someone in this position.<sup>[2]</sup>

### ***Neural activity nystagmus.***

- ***Optokinetic:*** See NHTSA SFST Participant Manual Session 8-21<sup>[1]</sup> Occurs when the eyes fixate on an object that suddenly moves out of sight or when they watch sharply contrasting moving images such as watching scenery from a moving vehicle or watching a train go by while parked at a crossing, etc.

*This type of nystagmus only lasts as long as it takes for the object to stop moving or for the person to stop looking at the moving object. You can avoid this by facing subject away from moving traffic and turning off your overheads (or also facing subject away from overheads and traffic). You can also be certain it is not Optokinetic when the subject's eyes are focused on your stimulus. The movement of the stimulus and the fixation on the stimulus by the subject precludes this form of nystagmus from being observed by the officer.*

- ***Epileptic Nystagmus:*** occurs during epileptic or other type of seizures which are easily detectable at scene!
- ***Physiological:*** Is a natural nystagmus that keeps the sensory cells of the eye from tiring. It is the most common type of nystagmus. It occurs in all of us all the time. It causes extremely minor tremors or jerks in the eyes, *but these are generally too small to be seen with the naked eye and if visible, not sustained if proper HGN procedures are followed. See NHTSA SFST Participant Manual Session 8-21<sup>[1]</sup>*

### ***Gaze nystagmus.***

Nystagmus occurs as the eyes move from the center position. It is separated into three types. *See NHTSA SFST Participant Manual Session 8-22-25*<sup>[1]</sup>

1. ***Horizontal Gaze Nystagmus:*** occurs as the eyes move side to side.
2. ***Vertical Nystagmus (VGN):*** up and down jerking of the eyes as they are held in the upmost position. The presence of VGN *may* indicate a high dose of alcohol or other drugs for that individual and will not be present without HGN.
3. ***Resting Nystagmus:*** is referred to as jerking as the eyes look straight ahead and is indicative of a pathological condition (see below) or the influence of Dissociative Anesthetic.

### ***Nystagmus caused by certain pathological disorders.***

These include brain tumors and other brain damage or some diseases of the inner ear. These disorders occur in very few people and in even fewer drivers. Many of these causes are so severe that it is unlikely that a person afflicted with the disorder would be driving. If the person does have nystagmus caused by one of these disorders, notify the medical board of DPS. *These types of nystagmus tend to be pendular rather than jerk nystagmus.*

- ***Medical Impairment:*** It is important to distinguish between the entire HGN test, with any single indicator of possible medical impairment the officer may witness while conducting certain aspects of the standardized HGN test. The examinations the officer conducts to assess possible medical impairment include: (1) equal pupil size; (2) resting nystagmus; and (3) equal tracking. For example, if the two pupils are distinctly different in size, it is possible the person may have a medical condition or maybe a prosthetic eye. In addition, if the two eyes do not track together, there is a possibility of a serious medical condition or injury. Medical personnel should be contacted and the officer should ask questions about head trauma. *See NHTSA SFST Participant Manual Session 8-27-29.*<sup>[1]</sup>
- ***Congenital Nystagmus:*** About 1 person in 200 has congenital nystagmus, which presents at birth or shortly thereafter. Similarly, nystagmus may accompany certain congenital conditions such as albinism, which is identified by the lack of skin and hair pigmentation. In all congenital conditions, and depending on the individual, the nystagmus may be constant, only at certain times (for example, when looking close up or when fatigued), or it may change appearance with the viewing direction (for example, more pronounced when looking right and diminished when looking left).<sup>[3]</sup>

### ***Natural nystagmus.***

A very small number of people exhibit a visible natural nystagmus. The number is so small according to Dr. Burns, who has carried out many NHTSA studies and who has been in the field for over 30 years, that she herself can count the total number of individuals with this condition on her hands.

Visible natural nystagmus is evident only at particular angles of gaze, but not before or beyond that point. During the test for HGN you are looking for not only nystagmus at a particular angle of gaze, but lack of smooth pursuit and end point nystagmus as well.

In addition, people who have natural nystagmus will know they have it and will most likely tell the officer before the test is administered.<sup>[4]</sup>

### ***Fatigue Nystagmus.***

Fatigue or endpoint nystagmus is caused by holding the eye at maximum deviation for 30 seconds or longer. It has nothing to do with fatigue causing nystagmus. The instructions refer to the stylus being held at maximum deviation for a minimum of four seconds. As long as the officer does not hold the stimulus at maximum deviation for thirty seconds, there will be no fatigue nystagmus. *See NHTSA SFST Participant Manual Session 8-46*<sup>[1]</sup>

The defense may claim the defendant was fatigued for lack of sleep, and this fatigue caused nystagmus. According to Dr. Burns, general fatigue or tiredness has no bearing on the manifestation of HGN. This finding was validated by a 1981 NHTSA study that showed fatigue had no significant effects. There is a 2001 study that suggests lack of sleep may exaggerate endpoint nystagmus<sup>[5]</sup>, but no other studies are known to prove that sleeplessness or systemic fatigue affect any other eye movements. The key is to not confuse fatigue with “fatigue nystagmus,” which is created if the eye is held at maximum deviation for 30 or more seconds.

### ***Things you should know about HGN.***

- 1) Officers are trained to administer the HGN test using a systemic 10-step process. Deviation from the 10-step process does not affect the validity of the test. However, it is good practice to always systematically follow the 10-steps to make sure no step is overlooked so no evidence is missed. *See NHTSA SFST Participant Manual Session 8-31-36.*<sup>[1]</sup>
- 2) The first step is to check if the subject is wearing eyeglasses. Eyeglasses are removed so the officer may have a better view of the subject’s eyes. Nystagmus is not a vision test. Therefore, it does not matter whether the subject can see the stimulus with perfect clarity, as this will not produce the clues associated with alcohol impairment. The reason eyeglasses are removed is they may impede the subject’s peripheral vision and may also impede the officer’s ability to observe the eye carefully. In short, the eyeglasses may get in the way of the officer being able to observe the clues. *See NHTSA SFST Participant Manual Session 8-31.*<sup>[1]</sup>

- 3) In addition to the questions asked of the subject, the first 2 stages of the test check for medical impairments: tracking ability and pupil size. If the eyes do not track together or the 2 pupils are of distinctively different size, these are signs of possible medical impairments. Medical personnel should be contacted, and the subject should be asked more about head trauma.
- 4) Always ask the subject if he/she has any medical conditions and have the subject explain the conditions. It is beneficial to ask about treatment plans for the condition and symptoms.
- 5) If resting nystagmus is observed, the officer should continue with the remainder of the test to check for other possible indicators of impairment and any possible indicators of medical conditions.
- 6) Always **start with the subject's left eye** <sup>[1]</sup>. This is the standardized performance. Although it makes no scientific difference, this is the way the test is written and should be performed. While it would not invalidate the result, it would add confusion for the fact finder and impeachment for the officer. The stimulus is held **12-15 inches** <sup>[1]</sup> in front of the subject's nose and slightly higher than the level of his/her eyes. Deviations from the instructions are discouraged because they are NHTSA guidelines, but do not affect the validity of the test. They are simply guidelines for ease of viewing and comfort of the subject.
- 7) ***Lack of Smooth Pursuit***: Two passes for each eye. It should take approx. 2 seconds to bring the eye from center to side and 4 seconds across the body. The time suggestion is required by NHTSA because it is an effective amount of time for the tester to view the required nystagmus. Defense counsel will attack speeding up the process. See "Robustness of the Horizontal Gaze Nystagmus Test" by Dr. Burns for more information regarding stimulus speed. *See NHTSA SFST Participant Manual Session 8-41* <sup>[1]</sup>
- 8) ***Distinct and Sustained Nystagmus at Maximum Deviation***: Take eye out until it has gone as far as possible. No white showing. Hold for a minimum of 4 seconds. Unless a valid reason can be articulated, do not hold at maximum deviation for longer than ten seconds. Again, while holding over 10 seconds, but less than 30 does not affect the validity, officers should follow the standardized performance. Holding the stimulus for longer than 30 - seconds can induce fatigue nystagmus. Repeat the procedure. *See NHTSA SFST Participant Manual Session 8-45* <sup>[1]</sup>
- 9) ***Onset of Nystagmus Prior to 45 Degrees***: You will reach 45-degrees when you have moved the stimulus about 15 inches to the side, if you held the stimulus 15 inches from subject's nose. Two indicators to determine this angle are: at 45 degrees, some white usually will be visible in the corner of the eye and you will be lined up or slightly beyond the edge of the subject's shoulder. Move stimulus slowly, this should take approximately 4 seconds to reach the edge of the shoulder. When you think you see jerking, stop moving the stimulus and hold it steady at that position to verify that the nystagmus is distinct and sustained. When you locate the onset of nystagmus, verify it is prior to 45-degrees (white showing and before edge of subject's shoulder). Repeat the procedure. *See NHTSA SFST Participant Manual Session 8-50* <sup>[1]</sup>

- 10) **Vertical Gaze Nystagmus (VGN):** This test reveals whether the tested individual has ingested certain drugs or a high dose of alcohol. An up and down jerking of the eyeball is indicative of the presence of VGN. Position the stimulus in a horizontal position approximately 12-15 inches from the subject's nose, tell the subject to hold their head still and follow with their eyes only, raise the stimulus until the eyes are elevated as high as possible, and hold for a minimum of 4 seconds to look for jerking. *See NHTSA SFST Participant Manual Session 8-60*<sup>[1]</sup>
- 11) The clues are cumulative. Distinct and Sustained Nystagmus at Maximum Deviation will not normally be observed without the observation of Lack of Smooth Pursuit and Onset of Nystagmus Prior to 45 Degrees will not normally be observed without observing both Lack of Smooth Pursuit or Distinct and Sustained Nystagmus at Maximum Deviation.
- 12) The implication is that the suspect has a BAC above 0.08 if the officer observes 4 or more clues. This test is **77% accurate in and of itself at the 0.10 level**<sup>[1]</sup> when done according to NHTSA guidelines by trained and experienced officers. This percentage does not consider other clues of impairment such as smell of alcohol, slurred speech etc. Defense attorneys will try to commit you to 77% accuracy, but keep in mind that this study was done in the lab, in the 1970s, with untrained officers.
- 13) This 77% figure does not mean that the remaining 23% of people aren't intoxicated. Rather the studies revealed that officers failed to detect clues and released intoxicated drivers (according to Dr. Burns, this is the most common error made by police: giving the subject the benefit of the doubt and releasing too many intoxicated drivers). Additionally, simply because a person's BAC is below a 0.08 does not mean the individual is not impaired or maintains their normal use of mental or physical faculties. Most studies show measurable impairment at BACs as low as 0.05. The American Medical Association in a directive recommends that the national limit be lowered from 0.08 to 0.05 where most individuals are measurably impaired.
- 14) All people have Nystagmus; it's just not visible by the naked eye (except in extremely limited circumstances).
- 15) **The American Optometric Association** in June of 1993 passed a resolution<sup>[6]</sup> that stated, "that the American Optometric Association acknowledges the scientific validity and reliability of the HGN test as a field sobriety test when administered by properly trained and certified police officers."
- 16) **Comparison of SFST Accuracies 1981 vs. 1998**

Study: Combined Tharp, Burns, & Moskowitz (1981)

- BAC: 0.10
- HGN: 77%
- WAT: 68%
- OLS: 65%
- Combined: 81%

Study: Stuster & Burns (1998)

- BAC: 0.08
- HGN: 88%
- WAT: 79%
- OLS: 83%
- Combined: 91%

The greater component and overall accuracies found during the 1998 study are attributable to 17 years of law enforcement experience with the SFSTs since the original study and a lower criterion BAC than in the original study (i.e., 0.08 vs. 0.10 percent). The 2018 edition of the NHTSA SFST Participant Manual has been updated to only reference the 1981 study for historical purposes.

- 17) Some maintain that HGN is the only SFST that should be performed on people over 65 and/or more than 50 pounds overweight. However, this is not good police procedure as it affords a defense attorney an opportunity to attack your failure to give the benefit of the doubt to the defendant. Do all tests that can safely be performed but take into consideration the age and weight of the subject. If you determine that only HGN should be done, have the subject do some alternate FST's such as the alphabet, counting backwards, finger count, Romberg, etc. Note the difference between Standardized Field Sobriety Tests or SFST's (which are the validated HGN, WAT, and OLS) and Field Sobriety Tests of FST's which are not validated.



## Walk and Turn

*See NHTSA SFST Participant Manual Session 8-44-47<sup>[1]</sup>*

There are eight clues on this test:

1. Loses balance during instructions
2. Starts too soon
3. Stops while walking
4. Misses heel-to-toe by more than ½-inch while walking
5. Steps off line
6. Uses arms to balance (6 inches or more)
7. Turns improperly
8. Takes the wrong number of steps

**Decision Point:** If the subject exhibits **two or more** clues, the implication is that he/she is impaired.

The Walk and Turn is a field sobriety test based on the important concept of divided attention. The test requires the subject to divide attention among mental tasks and physical tasks. The person is mentally tasked with comprehending verbal instructions, processing the information and recalling it from memory. The person is physically tasked with maintaining balance and coordination while simply standing still, walking, and turning.

- 1) If the subject cannot perform the test, document that fact, and list only the clues you were able to see. Historically, if a subject was unable to complete the Walk and Turn test, the Officer was instructed to assign all 8 clues. However, in 2004, the standard was altered to only assign observable clues.

Also document the reason for not completing the test (i.e. the subject's safety due to obvious intoxication). List other observations that indicate impairment but are not counted as clues: fails to count steps out loud, etc. Remember the age, weight, and physical disability requirements.

- 2) Like all divided attention tests, the Walk and Turn has two stages: (1) instructions stage, and (2) walking stage. Do not overlook the importance of either stage. Too often, officers speak too quickly or rush through the instructions, which can affect the weight of the evidence during the walking stage.
- 3) Whenever possible this test should be conducted on a reasonably dry, hard, level, non-slippery surface. There should be sufficient room for subjects to complete 9 heel-to-toe steps. The language requiring a designated straight line was removed in the 2013 NHTSA manual update.

It is commonly argued that the original studies were conducted and validated in a controlled laboratory environment and therefore the tests are not validated for roadside. Remember, the recent field validation studies have indicated that varying environmental conditions have not affected a subject's ability to perform this test. *See NHTSA SFST Participant Manual Session 8-62.<sup>[1]</sup>*

- 4) Original research for walk and turn suggested that subjects older than 65 years of age or those with back, leg, or inner ear problems had difficulty performing this test. However, less than 1.5% of the test subjects in the original studies were over 65 years of age. It is a misperception that weight invalidates this test (compared to the OLS). The test can still be conducted if it is safe for the officer and the subject, but the totality of the circumstances should be considered. *See NHTSA SFST Participant Manual Session 8-62.*<sup>[1]</sup>
- 5) The subject's footwear, or lack thereof, often becomes a source of contention when assessing the walking stage of the test in court. The manual suggests the officer give individuals wearing heels more than 2 inches high an opportunity to remove their shoes. However, subjects with any form of unusual footwear (flip flops, platform shoes, etc.) should be given the opportunity to remove the footwear prior to the test. Officers should ask the subject some probing questions regarding their unusual footwear to help in considering the totality of the circumstances (i.e. How often do you wear those shoes? Are they comfortable to walk in? Do you think you will do better wearing or not wearing them during this test?) *See NHTSA SFST Participant Manual Session 8-62.*<sup>[1]</sup>
- 6) If the subject exhibits 2 clues out of a possible 8, the implication is that the suspect's BAC is above 0.08. **The test is 79% accurate at or above the 0.08 level.** *See NHTSA SFST Participant Manual Session 8-70*<sup>[1]</sup>

Texas courts have found that an officer cannot generally testify to the correlation of blood alcohol concentration to standardized field sobriety tests, unless the defense "opens the door." *Smith v. State*, 65 S.W.3d 332 (Tex.App.—Waco 2001, no pet.); *Webster v. State*, 26 S.W.3d 717 (Tex.App.—Waco 2000, pet. ref'd); *Youens v. State*, 988 S.W.2d 404 (Tex.App.—Houston [1<sup>st</sup> Dist.] 1999, no pet.); *Jordy v. State*, 413 S.W.3d 227 (Tex.App.—Fort Worth 2013, no pet.).

## One Leg Stand

*See NHTSA SFST Participant Manual Session 8-77-78<sup>[1]</sup>*

There are four clues on this test:

1. Swaying
2. Using arms to balance (raising or using arms more than 6 inches)
3. Hopping
4. Putting the foot down before 30 seconds.

**Decision Point:** If the subject exhibits two or more clues, the inference is that he/she is impaired.

The One Leg Stand (OLS) is another field sobriety test based on the important concept of divided attention. The test requires the subject to divide attention among mental tasks and physical tasks. The subject's attention is divided among such simple tasks as balancing, listening, and counting out loud for a set amount of time (30 seconds). None of these mental and physical tasks are particularly difficult on their own, but the combination can be very difficult for an impaired individual to do for more than 25 seconds.

- 1) If the subject cannot perform the test, document that fact, and list only the clues you were able to see. Historically, if a subject was unable to complete the One Leg Stand test, the Officer was instructed to assign all 4 clues. However, in 2004, the standard was altered to only assign observable clues.

Also document the reason for not completing the test (i.e. the subject's safety due to obvious intoxication). List other observations that indicate impairment but are not counted as clues: fails to count steps out loud, etc. Remember the age, weight, and physical disability requirements.

- 2) Like all divided attention tasks, the One Leg Stand has two stages: (1) instruction stage, and (2) balance and counting stage. Do not overlook the importance of either stage. As discussed with the Walk and Turn, do not rush the instructions, which can be a tendency when officers become extremely familiar to the administration of the instructions through repetition.
- 3) The One Leg Stand requires a reasonably dry, hard, level, and non-slippery surface. The person's safety is always an important consideration when administering this test.

Standardizing this test for every type of road condition is unrealistic. The original research study recommended that the subject be asked to be performed the test elsewhere or that only HGN be administered. This is no longer the recommendation. Recent field validation studies have indicated that varying environmental conditions have not affected a subject's ability to perform this test. *See NHTSA SFST Participant Manual Session 8-73.<sup>[1]</sup>*

- 4) The subject should not be instructed to stop when they reach the count of One Thousand - Thirty. The officer is to stop the defendant when the officer's watch reaches 30 seconds.
- 5) List other observations that indicate impairment but are not counted as clues: not holding foot parallel to the ground, miscounting, etc. Remember the age and weight considerations.
- 6) Original research for the one-leg stand suggested that subjects older than 65 years of age, those with back, leg, or inner ear problems, or those who are more than 50 pounds overweight had difficulty performing this test. Unlike the Walk and Turn test, weight can be a factor in this test. The test can still be conducted if safe for the officer and the subject, but the clues may simply be observational. *See NHTSA SFST Participant Manual Session 8-73*.<sup>[1]</sup>

As noted above with the Walk and Turn test, less than 1.5% of the OLS test subjects in the original studies were over 65 years of age. There was no data containing the weight of the test subjects included in the final report. *See NHTSA SFST Participant Manual Session 8-73*.<sup>[1]</sup>

Remember, it may be argued that the test is not “validated” for subjects older than 65 or more than 50 pounds overweight, but this does not mean the test is not “valid” in showing evidence of impairment. Officers should consider age, weight, environmental factors, location, injury and/or physical ailments while administering the tests.

- 7) The subject’s footwear, or lack thereof, should be considered just as it was in the Walk and Turn test. The manual suggests the officer give individuals wearing heels more than 2 inches high an opportunity to remove their shoes. However, subjects with any form of unusual footwear (flip flops, platform shoes, etc.) should be given the opportunity to remove the footwear prior to the test.
- 8) Time is critical in this test. The original SCRI research has shown a person with a BAC above 0.10 can maintain balance for up to 25 seconds, but seldom for as long as 30 seconds. *See NHTSA SFST Participant Manual Session 8-78*.<sup>[1]</sup>
- 9) If the subject exhibits 2 clues out of a possible 4, the implication is that suspect's BAC is above a 0.08. **The test is 83% accurate at or above 0.08.** *See NHTSA SFST Participant Manual Session 8-79*.<sup>[1]</sup>

Texas courts have found that an officer cannot generally testify to the correlation of blood alcohol concentration to standardized field sobriety tests, unless the defense “opens the door.” *Smith v. State*, 65 S.W.3d 332 (Tex.App.—Waco 2001, no pet.); *Webster v. State*, 26 S.W.3d 717 (Tex.App.—Waco 2000, pet. ref’d); *Youens v. State*, 988 S.W.2d 404 (Tex.App.—Houston [1<sup>st</sup> Dist.] 1999, no pet.); *Jordy v. State*, 413 S.W.3d 227 (Tex.App.—Fort Worth 2013, no pet.).

## **SFSTs and Drug Detection**

With the rise of drugged driving cases, it is important to be aware that SFSTs are still our best detection tool. It is not unusual for the defense to suggest that SFSTs were created to indicate alcohol intoxication. Do not fall prey to this argument.

Remember that according to NHTSA, SFSTs are used to determine *impairment*. Impairment does not necessarily have to be caused by alcohol. It may be caused by alcohol, drugs, or a combination of the two. SFSTs have been validated in subsequent field and lab studies for alcohol and the other recognized drug categories.

### ***Horizontal Gaze Nystagmus & Drug Types***

The only drug types that **do** cause HGN are CNS depressants, dissociative anesthetics, and inhalants. The following drug types **do not** create HGN: cannabis, stimulants, hallucinogens, and narcotic analgesics. Although, some new research suggests that in high concentrations, cannabis can cause HGN.

### ***Divided Attention Tasks & Drug Impairment***

Under the influence of alcohol or drugs, a person's ability to divide attention becomes impaired. Some of the most significant evidence from all three phases of DWI detection can be related directly to the effects of alcohol and/or other drugs on divided attention ability. See *NHTSA SFST Participant Manual Session 5-19*<sup>[1]</sup>

### ***Advanced Roadside Impaired Driving Enforcement (ARIDE)***

ARIDE was created to address the gap in training between the SFST program and the DEC program. It is intended primarily for roadside use. This course provides a more in depth overview of drug classifications and drug impairment.

### ***Drug Evaluation and Classification Program (DEC)***

While any officer can utilize SFSTs to determine impairment, a Drug Recognition Expert (DRE) serves as an important resource in drugged driving cases. A DRE is trained through the DEC program and requires full field certification. As part of a 12-step process, DREs perform SFSTs in addition to other psychophysical and psychomotor tests to determine whether the suspect is under the influence of drugs. Unlike ARIDE, a DRE examination is more likely to be performed in a controlled environment. A DRE can also be used as an expert to testify about the effects of drugs on the body.

## Scientific Studies and Research

### 1) *Validation Studies on SFST's at .08*

#### A) Florida

Dr. Burns and the Southern California Research Institute (SCRI): The study used officers with an average of 9.5 yrs. experience, who conducted the 3 test standardized battery, and who followed the NHTSA guidelines. The study demonstrated that **95% of the officers' decisions to arrest drivers were correct**<sup>[1]</sup> using 0.08 as legal intoxication. Again, some of those released were intoxicated, but the officers gave them the benefit of the doubt. Dr. Burns states that overwhelmingly, when officers err, they err by releasing intoxicated individuals and not by arresting sober individuals.

#### B) Colorado 1995

Dr. Burns and the SCRI revealed that snow, cold, and slightly sloped sidewalks did not affect the officer's ability to make the correct arrest decision. Seven agencies were involved. Observers were in half the police vehicles. These observers were SFST trained. They were there to ensure SFST's were done correctly. These observers also tested people who were released. The study revealed that officers using the SFST battery, **made the correct arrest decision 93% of the time**<sup>[1]</sup>. This was corroborated by a breath test.

#### C) San Diego 1998

Dr. Burns and the SCRI used trained officers in this study using the SFST battery. The study revealed that the **officers made the correct arrest decision 91% of the time**<sup>[1]</sup>. In this study there were no observers riding with the officers and the officers were allowed to use portable breath test devices (PBTs).

### 2) *NHTSA's Psychophysical Tests for DWI Arrest*<sup>[3]</sup>

NHTSA (June 1977):

This was a study to determine the easiest and most effective methods of roadside testing in order to increase the ability of police to detect impaired drivers. The study concluded that alcohol gaze nystagmus (later called Horizontal Gaze Nystagmus) testing was most effective, along with the walk-and-turn and one-leg stand tests.

3) ***Development and Field Test of Psychophysical Tests for DWI Arrest***<sup>[4]</sup>

NHTSA (March 1981):

A study to determine the effectiveness of the sobriety test battery and it standardized the administration and scoring of each test. The test battery was subjected to laboratory and field evaluation. It concluded that more field testing needed to be performed, but the study showed that the test battery would be effective in increasing the ability of police officers to detect impaired drivers.

4) ***Evaluation of a Behavioral Test Battery for DWI***<sup>[5]</sup>

NHTSA (September 1983):

This study utilized a larger sample size to confirm the effectiveness of the standardized field sobriety test battery. It concluded that the HGN test was the most effective of the three tests and that greater accuracy in determining whether a subject's BAC is over .10 can be gained by combining the scores of the HGN and Walk-and-Turn tests.

5) ***American Medical Association***

Under Policy H-30.973, encourages state medical societies to urge their state legislators to adopt a blood alcohol level of 0.05 as per se illegal for driving. They also support working with Congress to make federal highway funds to states contingent upon state adoption of a blood alcohol level of 0.05 as per se illegal for driving.

*The AMA:*

- 1) *Encourages state medical societies to urge their state legislators to adopt a blood alcohol level of 0.05 percent [policy H-30.986, modified in 1997 calls for 0.04 percent] as per se illegal for driving; and*
- 2) *Supports working with Congress to make federal highway funds to states contingent upon state adoption of a blood alcohol level of 0.05 percent as per se illegal for driving. (Res. 1, I-89)*

6) ***Study: A Review of the Literature on the Effects of Low Doses of Alcohol on Driving-Related Skills***<sup>[6]</sup>

By Dr. Herbert Moskowitz (April 2000):

This study reviewed the scientific literature regarding the effects of alcohol on driving- related skills. One hundred and twelve articles – from 1981 to 1987 – were reviewed. The review of the literature provided strong evidence that impairment of some driving- related skills begins with any departure from zero BAC. By 0.050 g/dl, the majority of studies have reported measurable

impairment by alcohol. By BACs of 0.080 g/dl, more than 94% of the studies reviewed exhibited skills impairment. Specific performance skills are differentially affected by alcohol. Some skills are significantly impaired by BACs of 0.01 g/dl, while others do not show impairment until BACs of 0.06 g/dl.

7) ***Study: Driver Characteristics and Impairment at Various BACs***<sup>[7]</sup>

NHTSA (August 2000):

This study used a driving simulator and a divided attention task. The data obtained with 168 subjects demonstrates that alcohol impairs driving-related skills at 0.02, the lowest level tested. The magnitude of impairment increased consistently at BACs through 0.10, the highest level tested. While there is partial evidence of impairment at 0.02, a major conclusion of this study is that by 0.04, all measures of impairment that are statistically significant are in the direction of degraded performance. The data provides no evidence of a BAC below which impairment does not occur. Rather, there was evidence of significant impairment throughout the BAC range of 0.02 to 0.10, with increasing percentage of subjects impaired and increasing magnitude of impairment at higher BACs.

8) ***Study: Analysis and Evaluation of the Effect of Varying Blood Alcohol Concentrations on Driving Ability***<sup>[8]</sup>

Dr. Maurice E. Dennis (April 2000)

Dr. Dennis trained 19 people on a Driving Skills Enhancement Program that consisted of 6 different complex driving situations. They were: Skid Control, Auto Control Monster, Crash Simulator, T-Turn, Blocked Lane, and the Slalom. There were also Non-Driving Exercises involving balance, vision, and reaction time. All subjects received training on all aspects of the experiment. The test subjects were given a test using the Intoxilyzer to ensure they had no alcohol in their system. They were given a pretest on all driving and non-driving activities to determine their pre-drinking abilities. The data was recorded on all subjects for comparison with ability after reaching designated BAC's. The subjects were then dosed to 0.04, 0.07, and 0.10 and given all the tests after each designated BAC. Results: On Complex Driving Exercises (Skid Pad, Auto Control Monster, Crash Simulator)

BAC DECLINE

.04 13%

.07 17%

.10 24%



On Less Complex Exercises (Blocked Lane, T-Turn, Slalom)

BAC DECLINE

.04 2%

.07 3%

.10 8%

9) ***Study: Nystagmus Testing in Intoxicated Individuals***<sup>[9]</sup>

Dr. Karl Citek (November 2003):

Dr. Citek, who is an ophthalmologist, did a study testing HGN and VGN at different position; standing, seated, and supine. He confirmed the validity of the HGN test in the standing posture to discriminate blood alcohol levels of .08 and .10. He also established, with similar accuracies and reliabilities, the use of the HGN test in the seated and supine postures. There was a statistical difference in the observation of HGN based on test posture. The difference happened in the seated position and was attributed to the difficulty of seeing the eyes. If officers have to conduct the HGN in the seated position, it is recommended that they position the subject in such a way that the subject's eyes can be seen easily throughout the test. This may involve asking the subject to turn the body slightly at the waist, in addition to the head turn used in the current study. Such a minor change in posture will not affect the result. They also confirmed that VGN is present only when signs of HGN are present, and that the VGN test can be used to identify high levels of impairment at any test posture.

10) ***Robustness of the Horizontal Gaze Nystagmus Test***<sup>[10]</sup>

Marcelline Burns, (September 2007):

Dr. Burns conducted a study to determine if variations in how officers give the HGN test that are the subject of attacks by defense attorneys make the results inaccurate, thereby invalidating the test. The three important experiments test three major challenges by defense attorneys: change in stimulus speed; change in stimulus elevation; and stimulus distance from eyes.

The first experiment varied the speed of the stimulus from 1, 2, and 4 seconds.

*Conclusion:* In summary, the principal effect of variations in the speed of the stimulus was found to be false negatives, failures to detect a breakdown of smooth pursuit movements (failure to detect clues). The finding that rapid

stimulus movement lessens the likelihood of observing lack of smooth pursuit is relevant to law enforcement. In the interest of accuracy, stimulus speed should not be faster than 2 seconds.

The findings do not support the suggestion that variations in stimulus speed led to false alarm errors and thus should not invalidate test findings.

The second experiment tested variations in stimulus level compared to eye level, 2 inches above eye level, and 4 inches above eye level.

*Conclusion:* Greater accuracy in detecting nystagmus was observed when HGN was conducted at eye level and four inches above eye level. A four inch stimulus elevation results in the test subject opening the eyes more thereby making clue observation easier for the officer. It did not increase false positive observations in comparison to the other conditions. It has been suggested that this position engages different eye muscles than more moderate positions and would, therefore, yield radically different observations. The data does not confirm that claim nor do they provide evidence that would support a change in current training.

The third experiment varied the distance of the stimulus from 10 inches, to 12-15 inches, and to 20 inches.

*Conclusion:* NHTSA recommends that the stimulus be held 12-15 inches from the eyes. Increasing that distance to 20" did not alter the number of signs observed. When the distance was decreased to 10", officers correctly reported more signs. The magnitude of the difference is small, however, and is viewed as insufficient basis for changing the current standard.

*Over-All Conclusion:* Variations in the way HGN is performed tend to lead to false negatives, not false positives, and do not invalidate the HGN test.

11) ***The Visual Detection of DWI Motorists: US Department of Transportation, DOT HS808 677***<sup>[11]</sup>

*Problems Maintaining Proper Lane Position*

Weaving, weaving across lanes, straddling a lane line, swerving, turning with a wide radius, drifting, almost striking a vehicle or other object

*Speed and Braking Problems*

Stopping problems (too far, too short, or too jerky), accelerating or decelerating for no apparent reason, varying speed, slow speed (10+ under speed limit)

### *Vigilance Problems*

Driving in opposing lanes or wrong way on one-way, slow response to traffic signals, slow or failure to respond to officer's signals, stopping in lane for no apparent reason, driving without headlights at night, failure to signal or signal is inconsistent with action

### *Judgment Problems*

Following too closely, improper or unsafe lane change, illegal or improper turn (too fast, too slow, or too jerky), driving on other than designated roadway, stopping inappropriately in response to officer, inappropriate or unusual behavior (throwing, arguing, etc.), appearing to be impaired.

## 12) ***Experimental Evaluation of an FST Battery in the Marine Environment*** <sup>[12]</sup>

US Coast Guard (June 1990)

In this study, 97 volunteers were dosed with alcohol in a recreational boating setting. Experienced marine officers estimated the subject's BAC through field sobriety testing. The agents estimated impairment correctly 82% of the time. All officers gave the HGN test on the boat and on land. The remaining water tests consisted of some combination of the "hand pat," "alphabet recital," or "nose touch." On land, after allowing the subjects ten minutes to regain "land legs," the subjects were then given either the WAT or the OLS (in addition to all being given the HGN again). It was concluded that the accuracy of FSTs, notably the HGN, was not deteriorated in the marine environment.

## 13) ***Validation of Sobriety Tests for the Marine Environment***

D.D. Fiorentino (2010)

In this study, 331 boaters were administered four float tests in a seated position on The Lake of the Ozarks to determine their effectiveness in detecting impaired boaters. The four tests were the HGN, the Finger to Nose (FTN), the Palm Pat (PP), and the Hand Coordination (HC) tests. The study concluded that the four tests' results were consistent with the findings in roadside SFSTs and that these tests may be useful for marine officers to use in determining impairment at 0.08 and above for operators on the boat. HGN alone correctly predicted BAC status in 85% of the cases. FTN alone correctly predicted BAC status in 67% of the cases. PP alone correctly predicted BAC status in 65% of the cases. HC alone correctly predicted BAC status in 59% of the cases. Administering the HGN test alone was the most predictive of impairment even when combined with the other tests, although HGN and any one of the other tests was also 85% predictive. The study found that officers who could properly administer the test may confidently rely on HGN done on the water.

**14) *A 2-Year Study of  $\Delta$  9-tetrahydrocannabinol Concentrations in Drivers: Examining Driving and Field Sobriety Test Performance***

J. Forensic Sci. (Mar. 2018)

This study was a comparison between DREs and non-DREs on detection of marijuana in DWI cases. The study looked at police reports and DRE evaluations of THC positive samples. Among 363 marijuana only cases, 116 had a full DRE evaluation with a THC range of 2-60 ng/mL, and a 6 ng/mL median. The most common reasons for initial contact were speeding and failing to maintain a single lane. 78.6% had 0 clues in HGN, and 12.3% had 2 clues. 86.1% of participants exhibited 2 or more clues on the walk and turn test performed by a non-DRE compared to 91% performed by a DRE. When conducting the one leg stand test, those numbers were 65.9% and 63%.

**15) *The relationship between performance on the standardized field sobriety tests, driving performance and the level of Delta-9-tetrahydrocannabinol in blood***

Forensic Science International (2005), Psychopharmacology (2005)

This study aimed to assess whether performance on the standardized field sobriety tests provided a sensitive measure of impaired driving behavior following the consumption of THC. The study looked at 40 participants who consumed either a placebo, a low dose of 1.74% THC, or a high dose of 2.93% THC and then performed the SFSTs on three occasions – 5 minutes, 55 minutes, and 105 minutes – after smoking. The participants also did a simulated driving test 30 minutes and 80 minutes after smoking. The results of the study revealed that driving performance was not significantly impaired 30 minutes after consumption, but it was significantly impaired 80 minutes after consumption of both doses of THC. The percentage of participants whose driving performance was correctly classified as either impaired or not impaired based on the SFSTs ranged between 65.8 and 76.3%. The results suggest that performance on the SFSTs provides a moderate predictor of driving impairment following the consumption of THC and as such, the SFSTs may provide an appropriate screening tool for authorities that wish to assess the driving capabilities of individuals suspected of being under the influence of a drug other than alcohol. The best single predictor of driving performance from both doses was the one-leg stand. The study results also suggested that consumption of THC impairs both balance and attention, and that tests that assess these abilities may provide the best predictors of driving impairment following the consumption of cannabis.

16) ***An evaluation of the Standardized Field Sobriety Tests for the detection of impairment associated with cannabis with and without alcohol***

Canberra Australian Capital Territory National Drug Law Enforcement Research Fund (2006)

One of this study's aims was to examine the effects of cannabis and alcohol on SFST performance. The study involved dosing 80 subjects with low and high THC dosages with low and high dosages of alcohol. 48 of the 80 subjects were regular cannabis users. The proportion of individuals classified as impaired doubled after THC combined with alcohol. The use of SFSTs resulted in correct classification of up to 73.9% of participants as either impaired or not. The one-leg stand test was found to be the best predictor of impairment. The study concluded that the use of SFSTs is a moderately good predictor of driving impairment and the consumption of THC only and THC together with alcohol and that the SFSTs can provide relevant information concerning drug intoxication and driver fitness, in particular associated with the consumption of cannabis.

17) ***The Relation between the blood benzodiazepine concentration and performance in suspected impaired drivers***

Journal of Forensic and Legal Medicine (2008)

This study looked at the relationship between blood concentrations of benzodiazepines and the influence on performance in field sobriety tests. The study looked at 171 cases where driver's tested positive for benzodiazepines in sub-therapeutic, therapeutic, and elevated concentrations. The results of the study indicated a relation between the concentration of benzodiazepines and the results of some performance tests. Of the 171 cases examined, 53% were male drivers and 50% of the drivers were involved in crashes. The authors concluded that their studied indicated that increasing concentrations of benzodiazepines have an increasingly negative influence on behavior, walking, walking and turning, and the Rhomberg test. Although the authors concluded that a relation between the blood concentrations of benzodiazepines and pupil size, nystagmus or orientation could not be concluded; only 130 of the 171 subjects showed to have nystagmus despite being under the influence of only a benzodiazepine. This indicates that nystagmus may not be the best indicator of benzodiazepine impairment.

18) ***A placebo-controlled study to assess Standardized Field Sobriety Tests performance during alcohol and cannabis intoxication in heavy cannabis users and accuracy of point of collection testing devices for detecting THC in oral fluid***

Psychopharmacology (2012)

This study assessed the effects of smoking cannabis with and without alcohol on SFST performance. 20 heavy cannabis users participated in a double-blind, placebo-controlled study assessing percentages of impaired individuals on the SFST. As heavy cannabis users, all participants were always positive for THC with baseline THC levels of 7.1 ng/mL. Participants received alcohol doses or alcohol placebo in combination with THC. The study results showed that cannabis was significantly related to impairment on the one-leg stand test and that alcohol in combination with cannabis was significantly related to impairment on the HGN test. The study concluded that the SFSTs were mildly sensitive to impairment from cannabis in heavy cannabis users and that SFSTs were sensitive to impairment in both doses of alcohol. THC significantly increased the percentage of individuals showing impairment in the one-leg stand from 21% to 50% and from 0 to 15% on HGN. THC with alcohol generally increased the number of individuals displaying impairment in HGN, OLS, and total SFST score. The authors noted that impairment observed after the combination of THC and alcohol are most likely attributable to alcohol since most of the participants have developed a tolerance to the impairing effects of THC on performance.

19) ***Detecting impairment associated with cannabis with and without alcohol on the Standardized Field Sobriety Tests***

Psychopharmacology (2012)

The study looked at 80 individuals between the ages of 21 and 35; with half taking part in the low dose alcohol and half in the high dose alcohol. For each part of the study, two levels of THC or a placebo were administered in combination with the alcohol and performance on SFSTs was assessed 30 minutes after dosing. A number of significant differences in SFST performance were identified with 28 % of the sample failing the test (when the head movement and jerks sign was included) when low alcohol and low THC were administered together. When a higher dose of alcohol was administered with a low dose of THC, 38 % of the sample failed the test, and 35 % also failed when the high dose of alcohol was combined with a higher dose of THC.

**20) *Drug Recognition Expert (DRE) examination characteristics of cannabis impairment***

Accident Analysis and Prevention (2016)

The objective of this study was to determine the most reliable Drug Evaluation and Classification Program (DECP) metrics for identifying cannabis-driving impairment. The study evaluated 302 toxicologically-confirmed cases of people impaired on THC – those people were determined to be impaired on THC only by DREs – and 302 people without anything in their systems served as a control group. The results showed that there were no significant differences detected between cases of THC blood concentrations of greater than or less than 5 ng/mL. The finger-to-nose test best predicted cannabis impairment, followed closely by eyelid tremors. Other strong indicators include swaying on the one-leg stand test, 2 or more clues on the walk-and-turn test, and pupil rebound dilation. The study concluded that the combined observations on psychophysical and eye exams produced the best cannabis-impairment indicators.

**21) *Strengths and Limitations of two cannabis-impaired driving detection methods: a review of the literature***

The American Journal of Drug and Alcohol Abuse (2019)

This study was a review of numerous other studies and a review of the literature related to THC blood concentrations and impaired driving, as well as the ability of the standardized field sobriety tests to reliably detect THC impairment. The author noted that one recent study suggested that chronic marijuana users exhibit deficits in nystagmus and the walk and turn test. However, other studies indicate that the standardized field sobriety show poor accuracy amongst police officers at detecting cannabis impairment. The author noted that the available evidence indicates that the standardized field sobriety tests are not highly effective at detecting recent cannabis use or THC dosage – unlike with alcohol; and that the standardized field sobriety tests are poor at detecting recent cannabis use, especially among frequent users. The author cited three studies that where the crash risk of cannabis impaired drivers equites to twice that of non-impaired drivers. The risk is comparable to driving with a BAC of 0.05 or to distracted driving. The author concluded that although standard field sobriety tests have advantages over per se tests for cannabis-impaired driving, limitations of both leave cannabis users and law enforcement officials little guidance in assessing an individual's driving fitness after recent cannabis use.



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