



Can a Prosecutor Have Confidence in an Old Method?

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Prosecutors will have a large amount of data to contend with when trying a case where a collision reconstruction was completed. Many of the practices and techniques employed by Reconstructionists are based on scientific principles that were discovered centuries ago. Some of the equipment used to obtain data was developed in the early stages of collision reconstruction development. However, advances in technology have brought an array of new, sophisticated instruments and software programs. Consequently, a broad question comes to mind, "Do the instruments derived from this new technology make older techniques and equipment obsolete?"

Many reconstruction equations require a value for the coefficient of friction (drag factor) of the surface being considered before the equation can produce a result. Several sources can be utilized to provide a coefficient of friction value of a roadway surface. For this article, we will answer the aforementioned question as it relates to the use of an accelerometer (new technology) and the use of a drag sled (old technology.)

An accelerometer is a device when mounted in a vehicle measures motion as a rate-of-change of speed (deceleration and acceleration.) The change is usually measured by the use of a pendulum or a spring mass type. In order to apply the laws of inertial navigation to calculate the distance accurately, the accelerometer must be accurate and critically damped. A critically damped accelerometer will measure the change in "G" force at the exact moment in time at which it occurred. There are several advantages of using an accelerometer for a collision Reconstructionist: (1) it can measure the drag factor, speed, distance, and time; (2) it eliminates the vehicle's mechanical reaction time; (3) it includes static and kinetic friction; (4) it measures ABS or standard brakes; and (5) if operational, the actual crash vehicle or a similar vehicle can be used.¹

A drag sled can be a weighted apparatus with a section of tire attached to the bottom of the device, or more commonly, it is made from a cut section of tire filled with Portland cement. Either type of device is constructed so that it can be pulled along a surface with a scale and a reading from the scale can be obtained. Rander, Fleming, and King lists several reasons Law Enforcement Officers use a drag sled: (1) portability- a drag sled can be carried in the trunk of a police car; (2) special conditions- some collisions occur at a place or manner that using an accelerometer is impractical; (3) economical- drag sleds cost very little to make and are essentially maintenance free, which is conducive to department budgets; and (4) safety- using a drag sled at a crash site can be substantially safer to the investigator and the public rather than using other methods.²

There are several caveats with using either an accelerometer or a drag sled that need to be revealed. Accelerometer readings can be affected by the amount of brake pressure being applied during the test. Too little pressure will indicate a lower reading. Operating an accelerometer at very low speeds during the test will also create a falsely low average.³ An accelerometer used properly will test the complete system of a vehicle's stopping ability, which includes the brake system, suspension system, and the tire interaction with the road surface. Therefore, the same vehicle in the crash or an exemplar vehicle should be used during the accelerometer test.

Drag sleds should be pulled next to the skid mark in the direction the vehicle was going, and a sufficient number of pulls should be conducted at several locations along the skid mark. A drag sled should not be used on a wet road, on grass, or other surfaces that are made of loose materials. A drag sled should be pulled straight and parallel to the road surface. Pulling upward will produce a low result, and pulling downward will produce a high result. In addition, readings should be taken after the drag sled has broken free from its stationary position; the sled pull has smoothed out and it is no longer jerky.⁴ No matter which method is used, a prosecutor needs to understand and ensure the instrument was properly used to obtain the readings prior to going to trial. Asking questions is the best way to determine proper procedures were followed.

This article seeks to answer the question, "Is an accelerometer better at determining the coefficient of friction than a drag sled?" This is an important question for prosecutors because your case may involve calculations based on values derived from the use of a drag sled by the investigator. The short answer to the proposed question is, "an accelerometer is not better than a drag sled at determining the coefficient of friction of a roadway." Kwasnoski asserts, "In fact, there are several published studies that validate the use of drag sleds to measure road friction. In various tests, done by several independent researchers, the drag sled measurements would underestimate actual vehicle speeds."⁵ There are numerous other published reports that corroborate these findings. Using the drag sled is a conservative approach to finding the coefficient of friction for the roadway, thus, giving the benefit to the defendant because a lower drag factor will produce a lower speed.

Critics of the drag sled are abundant, and they allege many misleading opinions concerning the use of a drag sled. Critics may fall into one of the following categories: those who are self-serving individuals, those who embrace new technology, and those who just like change along with other reasons. They are not imprudent or irrational, but for some reason they have taken a stance against the use of a drag sled. However, prosecutors can have confidence in the drag sled for collision investigation when it is used correctly because published studies verify its use, and it is still an accepted method in the collision reconstruction environment.

¹Jobe, R. *Deceleration and Accelerometers*. (Page 6) Presented at Institute of Police Technology and Management: Special Problems in Traffic Accident Reconstruction Seminar, University of North Florida (April 19-23, 1993.)

²Rander, D., Fleming, K., and King, M. *The Drag Sled Versus New Technology: A Valuable Investigative Tool, Or A Dinosaur That Has Met its Time?* [On-line] Accessed: 1 March 2010 at <http://www.harristechnical.com/articles/skid6.pdf>.

³Kwasnoski, J. *From Crash to Courtroom: Collision Reconstruction for Lawyers and Law Enforcement*. (Pages 128-134) Tower Publishing, Standish, Me. (2005.)

⁴Kwasnoski. (Page 103-104.)

⁵Kwasnoski. (Page 118.)

Equip Yourself for District Court Battle

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The best way to win DWI battles in District Court is to walk in with weapons. Even if you know the law, carrying it around in a notebook is more effective than carrying it in your head. New prosecutors who are tossed into District Court don't have the luxury of time to research issues regarding impaired driving. There are entirely too many cases lost for silly reasons. Bear in mind, not all District Court judges are carrying the basics of DWI law around in their heads. Placing the law in their hands will place convictions on driving records. What follows is a list of basics for DWI cases. This list includes not only cases to rebut routine defenses, but buried statutes that come in handy as well. Make yourself a copy of these; familiarize yourself with their existence; compile a notebook to take into court with you; and quit trying to carry it around in your head.

Admissibility of Alco-Sensor readings: If the defendant is charged with Driving After Consuming Under 21 and took an Alco-Sensor test, that result is admissible at trial. 20-138.3(b2) states "...notwithstanding any other provision of law, an alcohol screening test may be administered to a driver suspected of violation of [driving after consuming <21], and the results of an alcohol screening test or the driver's refusal to submit may be used by a law enforcement officer, a court, or an administrative agency in determining if alcohol was present in the driver's body. The statute goes on to say it must be an approved device.

Did they refuse the second blow on the Intoximeter? The first blow comes in. 20-139.1(b3) and the refusal also comes in.

Does Melendez-Diaz mean you have to complete the chain of custody in District Court on blood tests? NO. In *Melendez-Diaz v. Massachusetts*, 129 S.Ct. 2527, 174 L.Ed.2d 314 (2009), this issue is specifically addressed. Footnote 1 says that Melendez does not change the fact that gaps in the chain of custody go to weight, not admissibility.

Often when you are dealing with a wreck case you have to "ballpark" when the collision took place. Defendants love to argue for dismissal when the time is not exact. If you have a BAC, pull out *State v. Fuller*, 176 N.C.App. 104 (2006). Fuller defines relevant time after driving as "any time after the driving". This puts you in a position to argue that the exact time of the wreck (with no post-wreck cocktails) is unimportant.

Always have *State v. Fields*, 673 S.E.2d 765, 2009 N.C.App. LEXIS 254 (2009) on hand. Fields deals with weaving in your lane of travel, and is often tossed out in court to suppress a stop based on the officer's observation of driving. Bear in mind that Fields is very fact specific. The Court says that "weaving within [the] lane, standing alone, is insufficient to support reasonable suspicion...." The case does not say that weaving PLUS middle of the night PLUS near a tavern PLUS whatever else you have is not enough. Make sure your judge knows this.

If you are in a jurisdiction with erratic annexation, you may have had jurisdictional issues regarding city police officers. Keep a copy of 15A-402 and 160A-286 on hand. Even if outside his jurisdiction, the stop is good *State v. Williams* 31 NC App 237; *State v. Pearson* 131 NC App 315.

On license checkpoints, defense attorneys love to quote *State v. Veazey*, 191 N.C.App. 181 (2008). That case is *Veazey #1*. It was followed by *Veazey #2* found at 689 S.E.2d 530, 2009 N.C.App. LEXIS 2234 (2009). The biggest lesson you can learn from *Veazey #1* is to make sure the trial court judge's order contains sufficient facts and conclusions for appellate purposes. It cites some good reference information regarding checkpoints, but is not, in my opinion, the "Holy Grail" of defeating license checkpoints that the defense bar perceives it to be.

This is only a starting point. Keep these documents with you in court and at least some of the issues that arise during trials can be resolved. One final suggestion: add to it when issues arise in your courtroom. Make a note of things you have tossed at you and if you need help or suggestions feel free to contact me at (910) 641-3050 or Sarah.Z.Garner@nccourts.org.

ABOUT THE AUTHOR

Sarah graduated with a BS from the University of Tennessee in 1982. She graduated with her JD from the University of Tennessee in 1988 and worked as Assistant DA in Knoxville TN from January 1989 to December 1994. She has been an ADA in the 13th District since January 1995.

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