

Accident Reconstruction & Crash Data Retrieval

by Richard C. Moakes, CEng

Recently the Pennsylvania Superior Court ruled in a case of first impression, Commonwealth v. Safka, that information retrieved from a vehicle's "event data recorder" (EDR) – akin to an airplane's "black box" – is admissible to establish a vehicle's speed prior to a crash. While appellate courts in Florida, Illinois, Massachusetts and New Jersey have all allowed EDR data to be admitted into evidence to demonstrate the speed of a vehicle, this is the first such case finding in Pennsylvania.

In their decision, the Pennsylvania Superior Court relied on the fact that the **National Highway Traffic Safety Administration** (NHTSA) has found that "EDRs may record (1) pre-crash vehicle dynamics and system status, (2) driver inputs, (3) vehicle crash signature, (4) restraint usage/deployment status, and (5) post-crash data such as the activation of an automatic collision notification (ACN) system.



EDRs are devices that record information related to an "event" - defined as a highway vehicle crash. EDRs can be simple or complex in design, scope, and reach. They can make a major impact on highway safety, assisting in real-world data collection to better define auto safety, aiding in law enforcement, and understanding the specific aspects of a crash. For years, automobile manufacturers and Supplemental Restraint System (SRS) vendors have been using the data from EDRs to support their development. Similarly, NHTSA has been using EDRs to support its crash investigation program. EDR data is routinely incorporated into NHTSA's crash databases.¹

In automobiles, the EDR was originally incorporated into the design of the airbag crash sensor to record data related to the deployment of the airbags, to assist the Supplementary Restraint System development, and to improve the system performance. The EDR is still tied to the "waking-up" of the crash sensor that is caused by an event that nearly deploys the vehicle's airbags or is severe enough to actually cause the airbags to deploy. When this happens, the current data relating to the vehicle's status is "dumped" into the memory of the EDR and is saved for possible future retrieval.

More and more car manufacturers as well as a broad range of vehicle models, now support the **Crash Data Retrieval tool** (CDR tool) which may be of significant assistance when analyzing a crash through the EDR.

The U.S. Code of Federal Regulations (49CFR563) took effect in September of 2012, and one of the requirements was that manufacturers make their EDR data commercially accessible. There are, however, a few issues to understand:

- The majority of the car manufacturers have addressed this requirement by working with Bosch, a world leader in EDR information and imaging technology, to provide access to their vehicle's EDR by way of the CDR tool.
- Land Rover and Jaguar have taken the "dealer tool" approach.

¹ www.nhtsa.gov/research/edr

- Hyundai and Kia have essentially collaborated with their normal scan tool supplier to develop a pair of original equipment specific data retrieval tools.
- It is important to note that the crash data from a Hyundai is not secure. Access to the data is not controlled by the Vehicle Identification Number (VIN) and therefore the correct VIN for the vehicle does not have to be entered to access the data. EDR data can be recovered from the Hyundai or Kia by entering another vehicle's VIN, a completely different model type, a different year, or a combination of all three; the recovered data however will be invalid. The data obtained can accidentally or deliberately be "spoiled" because of this retrieval issue.

Here are some useful tips:

- 1) Quickly put the other side(s) "on notice" to hold onto "their" car(s) in its post-accident state.
- 2) Get a "discovery request" out to the other side(s) to get access to the car(s) as soon as possible.
- 3) Employ an engineering expert who has received training in retrieving information from EDRs and analyzing the results through the CDR tool.
- 4) Arrange to access all vehicles and retrieve the data from the supported modules so that information can be included in any accident reconstruction analysis.

Call or email our **Accident Reconstruction Expert – Richard C. Moakes, CEng** - to find out if the CDR tool supports the vehicle in your legal matter.

A bout Richard C. Moakes, CEng

Richard C. Moakes, CEng, has over thirty-seven years of experience as an engineer. Prior to Consulting Engineers & Scientists, Inc. he was a senior engineer at Breed Technologies - a leading worldwide manufacturer and supplier of airbag systems to the automotive industry which is now known as Key Safety Systems. At Breed, Mr. Moakes was involved in research and development programs related to electronic sensors for airbags, inflators, and smart airbag systems. His development work resulted in patents filed in his name.

At Consulting Engineers & Scientists, Inc. Mr. Moakes' responsibilities include vehicular accident reconstruction (automobiles, trucks, buses, street cars, etc.), airbag analysis, material handling, workplace layout, machine guarding, and industrial lift truck evaluation. He has evaluated accidents involving vehicles, pedestrians, and motorcycles and has investigated matters concerning golf carts, all-terrain vehicles, and watercraft, as well as power and telecommunication cables.

Mr. Moakes is a Chartered Engineer in the United Kingdom as well as a Registered European Engineer. He has received certification in Crash Data Retrieval and has attended numerous Crash Data Retrieval Summits.

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