Ralph's Accident Reconstruction Newsletter: Volume 8, Number 5—Summer 2009

As I write this newsletter, business remains slow in many sectors. As perhaps all of you know, I initiated Ralph's Economic Stimulus Plan in March of this year; it has not seemed to cause overall recovery of this economy. Go figure! ☺ This plan will continue through September 4, 2009. Perhaps by then there will be light at the end of the tunnel, and that light will not be an approaching train!

In addition to all of the other severe economic news is the distressed automotive market. Despite these problems, cars and trucks continue to be manufactured and sold. Notably for the reconstruction community, those vehicles which already had event data recorder (EDR) capabilities associated with their airbag control modules (ACMs) and/or powertrain control modules (PCMs) will continue to do so, unless the government changes current mandates. More and more manufacturers of cars and light trucks are equipping their vehicles with some type of crash-related EDR capability, although those who are not on-board with the Bosch Crash Data Retrieval (CDR) system have their own proprietary systems and legal requirements for accessing that data. For instance, it may be the policy of a particular manufacturer to only provide or allow a data extraction from their vehicles when the situation involves criminal prosecution (not civil) and they are presented with a subpoena. In the near future (within about three years or so, unless the NHTSA changes rulings), those manufacturers whose vehicles contain crash-related EDR capabilities will be required to record and retain a particular, minimum, uniform set of data, and they will be required to have that data be accessible by systems available to consumers. As with current EDR data, those data sets will not be a substitute for a reconstruction of a collision, for a multitude of reasons, but they can be a very useful augmentation to a reconstruction.

There have been several cases in which EDR downloads have provided very useful information to augment reconstructions in which I have been involved. In a few pedestrian cases, the pedestrian impact created what is called a non-deployment (ND) event, demonstrating not only the vehicle's speed at impact but also the road speed, throttle position, engine speed, and whether or not the brake pedal was applied for five one-second increments before the pedestrian impact. As you may know, there is often scant evidence from a pedestrian impact which occurs at night, and there many not have been any skid marks left. Where was the point of impact? How far did the vehicle travel from impact to final position? Did the driver apply brakes before impact or after? How long before? The physical evidence at the scene may only consist of the final position of the pedestrian and the vehicle, without skid marks; with only that data, none of those questions can be answered. But with an ND file and five seconds of preceding data, those questions can be answered, at least in general terms. (The one-second data bits are not actually taken at the same instant in time and may vary by plus or minus 100 milliseconds or more.)

In one recent case, for which I cannot reveal the particulars, one vehicle was driven into a city street and was struck broadside by a vehicle already traveling on that street. Both vehicles were late-model GM products which included EDRs which provided, among other things, five seconds of pre-crash data. The vehicle which was already traveling on the street was shown to have been speeding. The vehicle which entered the street was shown to have been fully stopped for three seconds before starting to enter. A reconstruction determined their impact speeds, but the reconstruction could not demonstrate what either driver was doing five seconds away from impact. Because of the data in the EDRs in both vehicles, the speeding driver cannot now succeed in alleging that he was not speeding or that the other driver did not stop before entering the street.

When good site and vehicle data can be collected, a reconstruction can determine the speed of each vehicle at impact with reasonable accuracy; the range of the accuracy depends on the quality and extent of the available data. But, in the absence of skid marks or other pre-crash tire marks, we can tell very little about the pre-collision movement of either vehicle. Did the car start from a complete stop and accelerate normally to ten mph, or did it roll through the stop sign at ten mph? Was the other car driving a steady 55 mph approaching the intersection, or was it going 75 mph and slowing without leaving skid marks? Currently, most GM vehicles have five seconds (or more) of pre-crash data, and Chrysler vehicles have 2 to 5 seconds of pre-crash data when there has been a deployment. Ford vehicles which store crash data in the PCM store 20 or more seconds of pre-crash data and five seconds of post-crash data, if the PCM received a lock signal from the restraint control module (RCM). Most Ford vehicles which do not store data in the PCM currently have no pre-crash data related to vehicle dynamics stored in the RCM.

A reconstruction topic not really related to EDRs but which EDRs might help