

# CRASH TALK

IN THIS ISSUE

Questions Engineers Would Ask the Witness  
 NEXT ISSUE: Were the Lights On or Off?



## Questions Engineers Would Ask the Witness

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The role of an Accident Reconstructionist is to gather evidence and conduct an analysis using engineering principles in order to form opinions regarding the causes and contributing factors of a motor vehicle crash. Considerations may include roadway factors, environmental conditions, and the human role.

Typically, the role of the Engineer is the process of gathering physical evidence. Interviewing witnesses is normally conducted by an Insurance Adjuster. Often, scene witnesses have knowledge of additional evidence that is not readily apparent to an investigator. A comprehensive interview can bring forth this information. Once this additional information becomes available, an engineer can investigate further based on new information.

The style of witness statements can vary from a one or two sentence police statement secured at the collision scene, to a more comprehensive recorded interview, all the way to detailed oral questioning obtained during legal proceedings. While police statements might provide an unbiased insight into the collision circumstances, they are often written in times of stress and can be both ambiguous in nature and lacking in detail.

Often, there may be only one opportunity to conduct a witness interview. The role of the Accident Investigation Engineer differs from that of the Adjuster, and accordingly, an Engineer may ask very different questions.

Very often, we Engineers review witness statements and our wish list of questions is only lightly touched upon. Here is a Top 10 sample list of questions our Engineers might ask a scene witness given the chance.

### Top 10 Questions an Engineer Would Ask a Witness

**What was the orientation of the vehicles prior to the impact?**

- ◆ *Distance apart, direction of travel, lanes occupied, steering, braking, accelerating.*

**Where did the vehicles come to rest and what direction were they facing?**

- ◆ *Use landmarks as reference points (lamps standards, bus stops, trees, signs or curb edges) or perhaps print an aerial map and have the witness show rest points.*

**How many occupants were in each vehicle?**

- ◆ *Seating positions, stature of each occupant (estimate height and weight).*

**Are there any scene photographs available?**

- ◆ *Taken by either driver(s), passengers, or witnesses including whether Police attended and took photos. Not just a selection of what may be deemed as relevant, but all images at full resolution.*

**What were the road and weather conditions at the time?**

- ◆ *Clear and dry pavement, wet, icy, packed snow, loose gravel. Sunny, overcast, raining, snowing.*



### Was lighting a factor?

- ◆ Day – sun position a factor. Night – artificial lighting, commercial signs, burned out lamps.

### Where there any sight obstructions?

- ◆ Trees, signs, buildings, other vehicles, temporary or permanent objects.

### What cargo was in the vehicle?

- ◆ Nature of the cargo, location, size and weight estimate. Pay particular attention to cargo in pickup trucks, including auxiliary fuel tanks and quantity of fuel.

### Were any dash warning lamps illuminated?

- ◆ Check engine light, ABS, airbag, cruise control in use, headlights and daytime running lights.

### What electronic devices were in use (by driver or passengers) at the time?

- ◆ Cell phone, tablet, laptop, GPS unit (portable or factory equipped).

Answers to the above questions can sometimes fill in the blanks that are missing from physical evidence, or supplement the available physical evidence, in order to complete an investigation to answer the desired questions.

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## Heavy Truck EDR Update

Heavy trucks (Tractor-Trailers) are different than cars in many ways. One of those ways is the way crash data is recorded. In most cases, the Engine Control Module (ECM) records the only data available, and this module has no accelerometers or other way of directly measuring crashes. As a result, the engine brand itself determines what kind of data is available, not the vehicle brand. In addition, there is no direct collision information, and the crash is not the event that causes data to be written.


Recording triggers vary, but the three possible triggers are: sudden deceleration (hard braking), an engine fault code (check engine light) or sometimes the last stop. Note that if the vehicle is driven after the collision (e.g. moved to the side of the road), there may be a new “last stop” recorded, erasing collision-related data.


Downloading the ECM is a complex procedure, and if done incorrectly, data can be lost. Some ECMs can be downloaded in nearly any heavy-duty mechanics shop (engines such as Detroit Diesel, Cummins), while others need to be sent off to a licensed downloader (Mack). Still others (Caterpillar) can only be downloaded while on the engine.


If data is recorded, it's very useful for collision reconstruction. Captured data typically includes vehicle and engine speed, clutch and brake application etc., for two minutes prior to the collision, and 15 seconds after, in one second increments.

*Craig Assenheimer, P. Eng. has been a Collision Reconstruction Engineer with Graham Ryan Consulting Ltd., Edmonton office, for eleven years. In March 2013 he attended, the Preserving & Analyzing Information from Heavy Vehicle EDRs, course held in Evanston, Illinois with Martin Davidson of our Calgary office. Craig can be reached at [craig@grahamryan.com](mailto:craig@grahamryan.com).*

## Recalls

 Chrysler is recalling some model year 2003-2008 Dodge Ram 2500 4x4 and Dodge Ram 3500 4x4, model year 2007-2008 Dodge Ram 3500 4x2 Cab Chassis and model year 2006-2008 Dodge Ram 1500 Mega Cab 4x4 trucks. The left tie rod assembly may break, resulting in a loss of steering control, increasing the risk of a crash.

 Honda is recalling some 2002-2006 CR-V passenger vehicles. The driver-side power window switch may fail or melt and cause a fire. A switch failure, and a fire could occur even if the vehicle is not in use.

 Our tests have shown that High Performance summer tires require approximately three to five times longer stopping distance than winter tires on snow or ice.

## Crash Corner

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