

# CRASH TALK

IN THIS ISSUE



The Low Down on the Download, Circa 2015  
NEXT ISSUE: MY AIR BAG FAILED TO DEPLOY!

## The Lowdown on the Download, Circa 2015

by Jim Graham, P. Eng.,

In June 1984, I went on my first Accident Investigation, a site inspection that involved a *left-turn across path* impact scenario. Apparently a K-car turned left in front of an AMC Pacer. There were issues of speed and driver's line-of-sight. Having a keen interest in automobiles, this piqued my attention and kick-started my career as an Accident Reconstruction Engineer. For that crash, we measured skid marks, determined the driver's response and calculated impact speeds.

In 1987 I attended a course called "Collision Investigation and Reconstruction Techniques" at the University of Western Ontario's Multi-Disciplinary Accident Research facilities in London, Ontario. There were no downloadable vehicles in 1987. The "Occupant Restraint Systems" analysis at that time did not include air bags. Government testing and regulations were using the words "*passive occupant protection systems which may be optionally installed in front seating positions*". Air bags were making their debut into the front seating area of our vehicles.


Fast forward to 2015 and we have almost every vehicle manufacturer providing frontal, side and curtain air bags. Government standards have changed but the laws of physics have not. Between frontal, side, curtain and knee bags, there can be 10 separate deployable air bags in a passenger car. When an air bag is deployed (or when there is an impact/bump of some significance), this is the **trigger** to capture electronic data within the Event Data Recorder (EDR), which is typically part of the Air bag Control Module (ACM). Accident reconstruction engineers and Police collision investigators conduct downloads on almost every vehicle crash today. Older vehicles (late 90's GM's, for example) captured only the frontal crash severity (longitudinal delta-V) and the seat belt status for

the driver. In 2015, almost every car and light truck captures speed, throttle position, brake status (ON/OFF), and engine RPM for a period of 5 seconds prior to the collision event. In addition, we can expect steering wheel input, ABS braking status, stability control status, seat belt pre-tensioner status, roll angle, as well as lateral and longitudinal delta-V. The download often fills in many blanks of a collision investigation, such as braking before impact, since with anti-lock braking systems skid marks are often not visible. However, the electronic data needs to be considered in the context of the collision and whether there are any anomalies in the electronic data, as compared to the other evidence.



Prior to the model year 2012, only four vehicle manufacturers were readily downloadable: GM (~1995\*); Ford (~2001\*), Toyota (~2003\*) and Chrysler (~2006\*). However, since the 2012 model year, you should expect most manufacturers to be downloadable with the standard kit that engineers and Police use. Exceptions today include

Kia, Hyundai, Mitsubishi and Subaru, which require either a specialized kit or dealer involvement.

The first step in accident reconstruction in 2015 should be downloading the vehicle to assist with the collection of physical evidence of a case. Many issues can be resolved with a download, including vehicle speed, driver's response and seat belt use. However, if the vehicle is not downloadable, we can still use the accident investigation techniques that were used in the 1984 investigation where the K-car turned left in front of the AMC Pacer. 

*Jim Graham is the founder and a Principal Engineer at Graham Ryan Consulting Ltd., He has conducted over 5000 Accident Investigations.*

## Bad Puns and Technical Savvy Or a day in the life of an Engineer Wrangler...

Sometimes, I have to stop and remember the really important stuff we do. Working in an office of Accident Reconstruction Engineers is much like having children all over again without the labour, but in a good way. Between lunches out to celebrate Blackhawks wins, birthdays and lost bets, no two days are alike.

I came to Graham Ryan Consulting Ltd., (GRC) with an insurance background, having worked as a broker for 23 years. Never, in all the years of reporting claims to insurance companies did it occur to me that there were people that do what GRC does. It still amazes me after 12 ½ years. These guys go out day after day and look at vehicles and collision sites that have changed lives, and never for the better. Some files, particularly those involving children, are the most difficult. But they persevere to get answers. Sometimes the answers are not what the client was expecting, but science wins.

Graham Ryan Consulting Ltd. was born in 1995. Jim Graham opened in a downtown "office share" at Manulife Place. They used the parking garage for crash testing, which I am sure would have been frowned upon. In 1997 Pat Ryan joined the company as a partner, opening an office in downtown Calgary, moving to the SE a couple years later. Don Pohl came to GRC Edmonton in 1999. Rumour has it that Jim was suffering from the flu during the interview, and it wasn't pretty. Martin Davidson started in the Calgary office in 1999, finally someone to keep Pat in line. It's a tough job... Craig Assenheimer came to GRC Edmonton in 2001 as a University of Alberta Co-Op student, and when he graduated in 2002, we decided we needed to keep him.

By June 2001, GRC Edmonton had outgrown the downtown space, so they moved to the west end of Edmonton, where we are today. The barrier built in 2001 is our pride and joy.

Many test vehicles have ended up crashed into the rebar-reinforced block of concrete. Sometime, ask me about the Friday afternoon testing I encountered not long after I started.


In 2007 the Calgary office moved "down the hill" a few blocks to a new facility. In 2007 Don and Martin became partners at GRC. In 2008 our Newfoundland satellite office opened in St. John's to assist our Atlantic clients. The Edmonton office welcomed Kevin Huberdeau a couple years ago - he's still getting used to us.



"Helping" Grandpa work.  
Kevin Huberdeau with grand-daughter Freya.

Since 1995 GRC has welcomed 12 babies (two for Jim, two for Pat, three for Don and three for Craig) and a granddaughter each for Martin and Kevin, born days apart.

GRC is a unique company, I have never worked anywhere that keeps in contact with so many former employees, who drop by, come for lunch or just keep in touch.

We're going to celebrate our 20<sup>th</sup> Anniversary this October, then on to the next 20 years! Oh yes, bad puns, have you MET Jim Graham? 

*Cindy Afanasiff, Engineer Wrangler, has been with Graham Ryan Consulting Ltd., since February 2003. When not at GRC she spends several weeks each year globetrotting, marking items off her bucket list.*



## Did You Know?

Did you know you can register your child's car seat and your tires with the manufacturer? Recalls will then be sent directly to you.

For a child's seat go to: <http://www.tc.gc.ca/eng/motorvehiclesafety/safevehicles-defectinvestigations-1413.html>

For tires go to: <http://www.tc.gc.ca/eng/motorvehiclesafety/safevehicles-defectinvestigations-1414.html>

### EDMONTON

#201, 17823 - 106 Avenue NW  
Edmonton, AB T5S 2H1  
Tel (780) 425-1150 Fax (780) 425-1555

### CALGARY

#34, 11410 - 27 Street SE  
Calgary, AB T2Z 3V6  
Tel (403) 290-1150 Fax (403) 290-0659

### ST JOHN'S

P.O. Box 29070  
St. John's NL A1A 5B5  
Tel (709) 728-6917

If you would like to subscribe to "CrashTalk", have feedback, or wish to have CrashTalk in email format, please contact one of our offices, or e-mail [crashtalk@grahamryan.com](mailto:crashtalk@grahamryan.com). Back issues can be found on our website.