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CRASH TALK

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Toyota "Runaways"

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In the 1980's, the concept of the Unintended Acceleration (UA) vehicle was spawned as many Audi 5000 vehicles were blamed for crashes allegedly caused by the vehicle having a "mind of its own" and running away (the driver being unable to stop the car in spite of pressing the brake). Closer investigation of the situation showed that the so-called run-away was actually "pedal error", where the driver THINKS he/she is pressing hard the brake but in reality, the throttle is fully depressed. The reason Audi had a high number of complaints, as compared to other manufacturers, was simply that the Audi gas-brake pedal geometry was much different than "Grandpa's Buick". The North American consumer was simply not used to this European design. Specifically, the brake pedal was smaller and placed closer to the gas pedal.

The allegation is primarily focused on Toyota cars and light trucks.

Fast-forward to the present and we are again re-visiting the UA problem. This time the allegation is primarily focused on Toyota cars and light trucks. These vehicles are suggested to have an electronic mind of their own and cannot be stopped, once again in spite of the driver pressing fully on the brake pedal. There have been numerous recalls by Toyota that involve UA, including sticky gas pedals (Transport Canada recall 2010012) and floor mats that slide forward onto the gas pedal (Recall # 2009290).

Aside from sticky gas pedals (manufacturing flaws) and out-of-position floor mats (driver error), one common complaint or assertion is that the Toyota (electronically) applies throttle by itself against the driver's wishes, such that the vehicle cannot be stopped. However, unlike the 1980's, today's automotive technology provides us with a means to prove or disprove this scenario. The answer is the Event Data Recorder (EDR) or the "black box" device. In June 2011, Toyota has officially joined the ranks of GM, Ford and Chrysler as a downloadable vehicle by Police and other accident investigation personnel.

Toyota phased in the EDR around 2001 starting with Lexus model(s) at which time the EDR was collecting post-crash data (data after the impact, such as delta-V, seat belt status and time for deployment to occur) and some pre-crash data. By about model year 2006, all Toyota cars and light trucks had an EDR that typically record both pre-crash and post-crash events.

Pre-crash event data (typically for about five seconds before the crash) that is recorded by Toyota EDRs include speed, engine RPM and the extent of pedal application as well as whether the brake is applied. Accordingly, a download of the EDR from the latest Toyota-manufactured vehicles can confirm whether or not the gas and the brake have both been applied at the same time (the run-away scenario).

At Graham Ryan Consulting Ltd we have had opportunity to investigate numerous alleged Toyota run-aways, including the download of the Toyota EDR (prior to June 2011, downloads of this EDR could only be done through Transport Canada, as the commercially available software was still pending). To date, no downloaded EDR data has shown a gas AND brake application. However, we have found out-of-position floor mats and potentially sticky gas pedals. If you have a crash that involves a late model Toyota or Lexus vehicle and there is some concern over the "run-away" scenario, contact our office for further information.

Where to find the ACM

The air bag control module (ACM) is typically located along the center axis of the vehicle and either under the central dash region, or under the center console. Once assessed, the ACM can usually be mechanically removed by three fasteners. There is an electrical connector that requires disconnection as well.

Jim Graham P. Eng., recently attended the 2011 Crash Data Retrieval Summit in Houston, TX where Toyota vehicle download technology was presented.

Sample Toyota Download

DTCs Present at Time of Event (Most Recent Event, TRG 3)

Recording Status, Diagnostic	Complete
Ignition Cycle Since DTC was Set (times)	0
Airbag Warning Lamp ON Time Since DTC was Set (min)	0
Diagnostic Trouble Codes	None

Pre-Crash Data, 1 Sample (Most Recent Event, TRG 3)

Recording Status, Pre-Crash/Occupant	Complete
Time from Pre-Crash to TRG (msec)	900
Buckle Switch, Driver	Buckled
Buckle Switch, Passenger	Buckled
Occupancy Status, Passenger	AM50
Seat Position, Driver	Rearward
Shift Position	Drive

Pre-Crash Data, -5 to 0 seconds (Most Recent Event, TRG 3)

Time (sec)	-4.9	-3.9	-2.9	-1.9	-0.9	0 (TRG)
Vehicle Speed (MPH [km/h])	39.8 [64]	39.8 [64]	39.8 [64]	39.8 [64]	39.8 [64]	39.8 [64]
Brake Switch	OFF	OFF	OFF	OFF	OFF	OFF
Accelerator Rate (V)	1.09	1.09	1.13	1.21	1.21	1.21
Engine RPM (RPM)	1,600	1,600	1,600	1,600	1,600	1,600

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Crash Corner

Transport Canada Toyota Recalls:

- **2009290 Unsecured floor mat**
- **2010012 Sticky gas pedal**
- **2011082 Unsecured floor mat**
- **2011081 Unsecured floor mat**