

## SAFETY RISK

“SOON AFTER THE 2002 CAMRY WAS LAUNCHED... PROBLEMS BEGAN TO APPEAR AND TOYOTA ISSUED BULLETINS TO RECALIBRATE THE ECM - A COMPUTER SOFTWARE ISSUE. THIS WAS A FIRST ALERT”

# Recalls and reform

The Toyota acceleration issue has been one of the biggest auto safety stories in years, focusing attention on vehicle safety defects as well as problems at NHTSA. But what can be learned from this saga to ensure safer vehicles in the future?

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**PHOTOGRAPHY** COURTESY OF PAUL SANCYA/AP & CLIFF OWEN/AP

Since the establishment of NHTSA in 1966, it has issued dozens of Federal Motor Vehicle Safety Standards (FMVSS) and has conducted thousands of safety defect investigations, many of which led to recalls of the affected vehicles.

The issue of Toyotas that have experienced sudden unintended acceleration (SUA) has captured public attention since August 2009. It was prompted by national media stories about a high-speed runaway collision that took the lives of an off-duty California Highway Patrol officer and his family in a dealership-loaned Lexus ES sedan made by Toyota. Other identical instances subsequently surfaced, involving various Toyota and Lexus models. There are now over 50 fatalities in the USA allegedly caused by runaway acceleration in Toyotas.

Toyota initially blamed unintended acceleration on the vehicle owner's misuse of floor mats that could jam the accelerator pedal and not let it return to idle. Toyota then said it might also be a 'sticky pedal' and the fix was to insert a thin metal shim to restore a more normal pedal movement, all while denying it was an electronic or computer problem. There is however evidence that the Engine Control Module (ECM) computer has often had to be recalibrated to help solve acceleration problems, and that the Electronic Throttle Control (ETC) system can be affected by electromagnetic interference (EMI).

### NHTSA in the spotlight

The Toyota runaway acceleration issue also brought focus upon NHTSA, and the many times between 2002 and 2009 that the Office of Defects Investigation (ODI) had been notified of Toyota acceleration issues. ODI had opened preliminary investigations, had communications and meetings with Toyota, but then terminated the investigations without any findings of defects, although it later materialised the Toyota responses and meetings involved two former NHTSA ODI employees who then worked for Toyota.

In early 2010, US Congressional Committees held hearings on the Toyota runaway acceleration issue, and probed NHTSA's on-again-off-again investigations over the previous decade. In fact, in my position as an auto safety expert, I had meetings with Congressional staff prior to the

hearings to brief them on the history and technology involved, and to recommend what Congress should do to correct the deficiencies evident at the automakers and NHTSA.

At the February 24 hearing, Toyota's CEO, Akio Toyoda, testified and acknowledged that safety had slipped in their rush to expand and produce quickly. James Lentz, president of Toyota USA, then admitted that the floor mats and sticky pedal fixes might not totally correct the acceleration problems, and there was a chance that electronics might be at fault.

### Known for years?

Soon after the 2002 Toyota Camry was launched, problems began to appear and Toyota issued bulletins to its dealers to address "engine surge problems" by recalibrating the Engine Control Module (ECM) – a computer software issue. This was the first alert back in 2002. In March 2004 – as complaints of unintended acceleration in the Camry and Lexus ES increased – NHTSA opened *Preliminary Evaluation PE04-021*, but soon closed it with the caveat that this "did not constitute a finding that a safety-related defect did not exist". But in responses to NHTSA, Toyota revealed three potential concerns, which included throttle body, accelerator pedal, and Engine Control Unit (ECU).

In 2005 and 2006, NHTSA received petitions from concerned owners of Camrys experiencing inadvertent acceleration but closed both investigations citing "limited resources". NHTSA then opened another similar investigation in 2007 and closed it seven months later. On this occasion, there was no recall nor any advisory to alert the public.

In early 2009, Toyota Ireland issued a field technical report of five cases of uncontrolled vehicle acceleration. The accelerator pedal stuck down and engine speed continued to increase to maximum rpm. The Toyota technician

Toyota began using electronic throttle control in the 2002 Camry. This 2007 Camry was part of Toyota's recall for sticky accelerator and floor mats



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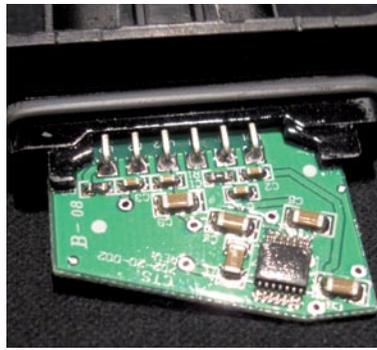
was able to reproduce the problem, and he detected an internal malfunction inside the accelerator pedal mechanism. The correction was to replace the accelerator pedal. But Toyota Ireland did not notify NHTSA of the issue.

The Toyota and NHTSA saga has brought other safety issues to the surface, top of the list being that Toyotas lack any 'brake-override' fail-safe feature. Some automakers such as VW, Audi, Mercedes-Benz, and BMW added that brake override feature starting around 2000, likely in response to the runaway acceleration crisis that affected Audi in the 1980s. Toyota is now adding the feature starting with its 2011 models. Some say it should have happened back in 2002.

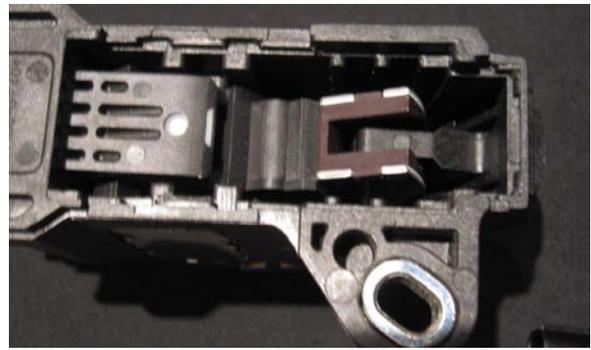
### Hearings and safety law

The US Congress held a series of hearings in February and March 2010 to probe the Toyota acceleration issue, including the role of NHTSA. As a result of these hearings – and revelations from testimony and documents – two major developments have recently occurred in early 2010.

First, NHTSA fined Toyota US\$16.4 million for Toyota's delay in



The internal circuit board sensor of the CTS-made accelerator pedal (above left); the internal arms within the pedal caused the voltage to vary as the accelerator was depressed



notifying NHTSA of accelerator pedal problems. NHTSA learned that Toyota had identified 'sticky accelerator pedals' in many countries across Europe by September 2009, yet waited four months before notifying NHTSA – instead of within the legally required five days. Toyota paid that fine.

Congressional Hearings on the proposed Motor Vehicle Safety Act 2010 began in May, and if the legislation is passed later this year, NHTSA will also be better funded and staffed with more safety engineers and electronics specialists. As a result, it will be better able to monitor and investigate the reliability and safety performance of the myriad complex electronic systems integrated into the vehicles of today and tomorrow.

NHTSA will be directed to mandate that all future vehicles be equipped with fail-safe brake override systems so the driver will be able to

cancel out any unintended acceleration. There will also be rule-making to ensure a vehicle can be brought to a stop within a certain distance – even if the engine is at full throttle. And there will be a rule to require that electronic systems be reliable and not be adversely affected by moisture, water, heat, cold, and electromagnetic interference.

There will also be a requirement that all vehicles be equipped with Event Data Recorders (EDR) to record vehicle performance data for at least 60 seconds prior to any crash initiation. The data will be accessible to NHTSA investigators, which will aid in assessing crashes and potential defects.

There will also be strict requirements for automakers to bring crucial safety information promptly to NHTSA, and for senior executives to take a hands-on role and affirm that the information and responses to NHTSA are fully accurate and complete, with greatly increased civil penalties and fines for delaying or withholding such information. And the public will have greater access with easily obtainable means via NHTSA's website to defect investigations, to which vehicle owners and mechanics will be invited to contribute.

This is not the first – nor will it be the last – time that vehicle safety defects capture public and government attention. But arising out of these issues and concerns there will soon be positive measures under way by hopefully all automakers as well as NHTSA that will ensure greater candor and focus on vehicle safety and reliability. We will thus move significantly forward in encouraging and implementing the critical principle that safer vehicles will prevent accidents and injury, with the goal being zero fatalities. ◀

*Byron Bloch is an auto safety expert in the USA and has investigated hundreds of accidents as to their cause and the vehicle's crashworthiness. In the Toyota and NHTSA situation, he has advised media, attorneys, and Congressional staff, recommending how improvements can be made on both sides of the fence. His website is [www.AutoSafetyExpert.com](http://www.AutoSafetyExpert.com)*

## The new shape of quality

Toyota's CEO, Akio Toyoda, has plans for a radical quality control shake-up at the Japanese car-maker



Toyota has convened the first meeting of its Special Committee for Global Quality. Chaired by TMC president Akio Toyoda, the committee aims to spearhead reforms to further instill the company's operations throughout the world with a customer perspective.

The committee members include newly appointed chief quality officers for North America, Europe, China, Asia and Oceania, the Middle East, Africa, and Latin America, who will represent concerns of customers.

TMC's global committee will investigate the causes of quality problems, including those that necessitate recalls, and re-examine the factors that affect quality in every phase of design, manufacturing, marketing, and service. Several quality measures have already been agreed by the committee. Regarding recalls, on behalf of the chief quality officers (CQOs), safety executives will participate in recall and other safety decision-

making on a global basis. This is aimed at establishing a system in which representatives from each region will voice customer concerns and participate in determining if and how to undertake recalls and other safety measures.

The CQO teams and representatives who participate in recall decision-making will promptly share information on customer complaints, defects, and recalls with the global team members. By realizing these measures, Toyota aims to structure an optimal and prompt recall decision-making process both globally and locally.

Toyota is also strengthening its on-site information-gathering capabilities in regard to suspected quality problems. For instance, in the USA, the Swift Market Analysis Response Team (SMART) will conduct on-site inspections as promptly as possible.

To support analysis of the causes of accidents, Toyota North America will, in cooperation with the authorities, expand the use of EDRs, which can record data regarding vehicle condition and driver operation.

