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Congress of the United States
House of Representatives

COMMITTEE ON ENERGY AND COMMERCE
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February 22, 2010

Mr. James E. Lentz
President and Chief Operating Officer
Toyota Motor Sales, U.S.A., Inc.
19001 South Western Avenue
Torrance, CA 90501

Dear Mr. Lentz:

In response to the Committee's requests, Toyota has provided over 75,000 pages of internal company documents, including over 20,000 pages in Japanese. We thank you and Toyota for this cooperation.

Our preliminary review of the documents raises three significant concerns. First, the documents appear to show that Toyota consistently dismissed the possibility that electronic failures could be responsible for incidents of sudden unintended acceleration. Since 2001, when Toyota first began installing electronic throttle controls on vehicles, Toyota has received thousands of consumer complaints of sudden unintended acceleration. In June 2004, the National Highway Traffic Safety Administration (NHTSA) sent Toyota a chart showing that Toyota Camrys with electronic throttle controls had over 400% more "vehicle speed" complaints than Camrys with manual controls. Yet, despite these warnings, Toyota appears to have conducted no systematic investigation into whether electronic defects could lead to sudden unintended acceleration.

Second, the one report that Toyota has produced that purports to test and analyze potential electronic causes of sudden unintended acceleration was initiated just two months ago and appears to have serious flaws. This report was prepared for Toyota by the consulting firm Exponent, Inc. at the request of Toyota's defense counsel, Bowman and Brooke, LLP. Michael Pecht, a professor of mechanical engineering at the University of Maryland, and director of the University's Center for Advanced Life Cycle Engineering (CALCE), told the Committee that Exponent "did not conduct a fault tree analysis, a failure modes and effects analysis . . . or provide any other scientific or rigorous study to describe all the various potential ways in which a sudden acceleration event could be triggered"; "only to have focused on some simple and obvious failure causes"; used "extremely small sample sizes"; and as a result produced a report

that “I would not consider . . . of value . . . in getting to the root causes of sudden acceleration in Toyota vehicles.”

Another expert consulted by the Committee, Neil Hanneman, an engineer with over 30 years experience in automotive manufacturing, product design, and product development, reached a similar conclusion, informing the Committee that the report “does not follow a scientific method” and fails to test “major categories” of potential causes of sudden unintended acceleration, including “electromagnetic interference/Radio frequency interference,” “environmental conditions,” the electronic control module (ECM), and “the software algorithms in the ECM.”

Third, Toyota’s public statements about the adequacy of its recent recalls appear to be misleading. In a February 1, 2010, appearance on the *Today Show*, you stated that Toyota has “studied the events of unintended acceleration, and [it] is quite clear that it has come down to two different issues,” entrapment of accelerator pedals in floor mats and sticky accelerator pedals. In an appearance the same day on CNBC you repeated this claim and reported that Toyota is “very confident that the fix in place is going to stop what’s going on.”

The documents provided to the Committee appear to undermine these public claims. We wrote to you on February 2, 2010, to request any analyses by Toyota that show sticky pedals can cause sudden unintended acceleration. Toyota did not produce any such analyses. To the contrary, Toyota’s counsel informed the Committee on February 5 that a sticky pedal “[t]ypically . . . does not translate into a sudden, high-speed acceleration event.” Moreover, our review of the consumer complaints produced by Toyota shows that in cases reported to the company’s telephone complaint lines, Toyota personnel identified pedals or floor mats as the cause of only 16% of the sudden unintended acceleration incident reports. Approximately 70% of the sudden unintended acceleration events in Toyota’s own customer call database involved vehicles that are not subject to the 2009 and 2010 floor mat and “sticky pedal” recalls.

These concerns are explained in more detail below. We expect that members of the Subcommittee will ask you about these concerns during your testimony tomorrow and we ask that you come prepared to address them.

I. Toyota’s Response to Reports of Sudden Unintended Acceleration

In the early 2000s, Toyota began producing vehicles that operated with an electronic throttle control system that severed the mechanical link between the accelerator pedal and the engine. In place of the cable that once connected the two components, sophisticated computer and sensor systems now communicate an accelerator pedal’s position to the engine throttle, telling the car how fast it should go. Toyota began installing these electronic control units in Lexus, Camry, and Prius models in 2001 and 2002 and in all Toyota-made vehicles by 2006.¹

¹ See U.S. Bound Vehicle Models and MY with ETCS-i, at TOYEC_0000577.

Toyota has received many complaints from consumers about sudden unintended acceleration since 2000. It also received evidence that the number of complaints increased in vehicles with electronic throttle controls. On June 3, 2004, Scott Yon, an investigator in the NHTSA Office of Defects Investigation (ODI), sent Toyota Assistant Manager of Technical and Regulatory Affairs Chris Santucci an e-mail attaching a chart showing a greater than 400% difference in "Vehicle Speed" complaints between Camrys with manually controlled and electronically controlled throttles.²

In response to the Committee's January 28, 2010, request for internal Toyota documents, the company provided a representative sample of reports describing calls received through the company's telephone complaint line. To produce this sample, Toyota started with 37,900 customer contact reports from the company's database that Toyota identified (via the company's complaint coding system) as potentially related to sudden unintended acceleration. Toyota then randomly selected 3,430 of these complaints for review, ultimately determining that 1,008 of these records directly related to consumer concerns about sudden unintended acceleration, engine surge, or similar problems. Toyota provided these 1,008 reports to the Committee.

Toyota received many of these calls after October 2009 when it recalled of 3.8 million vehicles because their accelerator pedals could become entrapped in all-weather floor mats, potentially causing sudden unintended acceleration. Excluding calls after October 1, 2009, calls that did not involve incidents of sudden unintended acceleration, and calls involving Toyota vehicles produced before the year 2001, there were 233 reports of sudden unintended acceleration produced to the Committee from the random sample of 3,430 complaints Toyota reviewed. Of these 233 complaints, 69 involved vehicle crashes.

These 233 incidents occurred in a broad variety of Toyota vehicles, and were reported in vehicles produced in every model year from 2001 through 2010.³ Assuming that the 3,430 complaints randomly selected by Toyota for review are a representative sample of the 37,900 complaints in the Toyota database, Toyota would have received an estimated 2,600 complaints of sudden unintended acceleration from Toyota and Lexus drivers between January 2000 and October 2009. These complaints would have included an estimated 760 crashes.

In the data the Committee reviewed, operators on the Toyota customer complaint line (who relied on consumer reports and information from dealer inspections) identified floor mats or pedals as the cause of only 16% of the sudden unintended acceleration incident reports. Approximately 70% of the sudden unintended acceleration events in Toyota's own customer call database involved vehicles that are not subject to the 2009 and 2010 floor mat and "sticky pedal" recalls.

² E-mail from Scott Yon to Christ Santucci and attachment, (June 3, 2004), produced by NHTSA.

³ Twenty-nine percent of the complaints involved Camry models, 13% involved Lexus models, 10% involved Corollas, and 9% involved Tacoma models. Model year 2007 vehicles were the subject of 17% of all sudden unintended acceleration complaints, and model year 2002 and 2004 vehicles were each the subject of 13% of these complaints.

The documents provided to the Committee reveal that Toyota's frequent response to these complaints was to dismiss the possibility of a failure in its electronic throttle control system. In 2005, the driver of a 2004 Corolla reported to Toyota's customer call center that he was in the process of parking his car "when it sounded like the engine revved then accelerated through a wooden fence and hit a tree." In response, a "national representative" of Toyota informed him that "Toyota has found that these incidents are most often the result of driver error."⁴ An internal memorandum written in 2008 or later states that in "many" cases of sudden unintended acceleration, "pedal misapplication/driver error has been the cause."⁵

In the documents provided to the Committee, Toyota representatives commonly responded to drivers reporting sudden unintended acceleration by concluding that the events the consumer described could not have happened. Toyota's internal files are replete with such statements from the company. For instance:

- A November 9, 2006, letter from Carole Hargrave of Toyota Motor Sales to a 2005 Toyota Tacoma driver states: "It is our understanding that you reported that you applied the gas pedal when it stuck, you then applied the brake but the vehicle kept going and hit four parked cars. Your vehicle was inspected by one of our field technicians in regards to your concerns. The throttle was inspected and moved freely without any binding and was found to operate as designed. The brakes will always override the accelerator. In order for this accident to happen as reported two totally separate systems, the brakes and throttle, would have to fail at exactly the same time. This is virtually impossible."⁶
- A March 5, 2007, letter from the driver of a 2003 Camry states that he was preparing to pull out of his driveway, had his foot on the brake, and put the car in reverse, when "the car took off, in reverse, like a rocket ship, careened down my driveway, crossed . . . a main street, jumped the curb on the other side of the street and continued moving in reverse between a utility pole and the street sign. It then hit a tree . . . and finally came to a stop . . ." According to the letter, the Toyota dealer to whom he brought his damaged vehicle "denied that the car could have possibly malfunctioned" and stated that "such a thing has never happened."⁷
- A June 28, 2007, letter from Troy Higa of Toyota Motor Sales to the driver of a 2007 Toyota Tacoma states: "It is our understanding that while you were attempting to park your vehicle in a parking lot, you said you applied the brakes but the vehicle accelerated, which caused you to run over the parking bump and into another vehicle in the next parking space. . . . In order for the accident to have occurred as reported, two different

⁴ See Claim File 2005-08-38808, at TOYEC_90008834-37.

⁵ Unwanted Acceleration Investigations on Toyota Vehicles, at TOYEC_00042008 (emphasis in the original).

⁶ Letter from Carole Hargrave to 2006 Toyota Tacoma driver, (Nov. 9, 2006), produced to the Committee by NHTSA.

⁷ Letter from 2003 Camry driver to Jim Lentz, (Mar. 5, 2007), at TOYEC_90004428.

systems within the vehicle would have had to fail, those being the throttle linkage and brakes. For both systems to fail simultaneously is virtually impossible.”⁸

In March 2007, NHTSA began investigating whether accelerator pedals on some Lexus models could become entrapped in all-weather floor mats, causing sudden unintended acceleration.⁹ In response, Toyota issued a limited recall of 55,000 2007 and 2008 Camrys and Lexus ES350 vehicles, advising drivers of those cars to remove all-weather floor mats and await notification that a redesigned all-weather floor mat was available for their vehicles.¹⁰

In October 2009, Toyota expanded its floor-mat recall to include six additional models spanning the 2004 to 2010 model years.¹¹ Toyota enlarged the recall once again in November 2009 to include a total of 4.3 million vehicles.¹²

Toyota issued another large recall in January 2010. This recall, encompassing 2.3 million vehicles, targeted pedals that can become “sticky,” or slow to return to idle, when subjected to wear or certain environmental conditions.¹³ At the time of this recall, Toyota took the unusual step of stopping sales and production of the eight affected models, including two of the most popular sedans in the U.S. market, the Camry and the Corolla.¹⁴

Throughout this period, Toyota has consistently maintained that there are no defects in its electronic throttle control system (ETCS-i) that could cause or contribute to sudden unintended acceleration. In public appearances on February 1, 2010, you emphatically denied any electronic cause of these incidents. Reporters asked you about speculation that defects in Toyota’s electronic controls could be responsible for sudden unintended acceleration, and you insisted that thorough testing had ruled out such a possibility.¹⁵

II. The Exponent Report

⁸ Letter from Troy Higa to 2007 Toyota Tacoma driver, (June 28, 2007), produced to the Committee by NHTSA.

⁹ NHTSA, ODI Resume, PE07-016, (Mar. 29, 2007).

¹⁰ Letter from Chris Tinto to Dan Smith Re Toyota and Lexus Optional Equipment All Weather Floor Mat, Part 573 Defect Information Report, (Sept. 26, 2007).

¹¹ Letter from Chris Santucci to Dan Smith Re Certain Toyota and Lexus Vehicles Potential Floor Mat Interference with Accelerator Pedal, (Oct. 5, 2009).

¹² *Data point to Toyota’s throttles*, Los Angeles Times, (Nov. 29, 2009).

¹³ *Doubt cast on Toyota’s decision to blame sudden acceleration on gas pedal defect*, Los Angeles Times, (Jan. 30, 2010).

¹⁴ *Toyota halts sales of eight models, including Camry and Corolla, over acceleration issues*, USA Today, (Jan. 26, 2010).

¹⁵ *Squawk Box*, CNBC, (Feb. 1, 2010).

In response to your public statements, we wrote to Toyota on February 2, 2010, to request “all analyses or documents that substantiate” your claim that electronic malfunctions were not causing sudden unintended acceleration.¹⁶ In response, Toyota provided two types of documents to the Committee: (1) reports of internal testing of various components and features of Toyota’s electronic throttle control system, and (2) a single evaluation of the potential for sudden unintended acceleration in Toyota and Lexus vehicles by the consulting firm Exponent, Inc. Neither category of documents appears to justify your public comments.

The electronics testing documents Toyota provided include thousands of pages of engineering standards; test methods; pre-production vehicle and component evaluations; e-mail correspondence between Toyota engineers about field testing of new features of the company’s ETCS-i system; engineering change instructions; reports on field testing of competitor vehicles; and sketches, diagrams, test engineering reports, photographs, e-mails, and PowerPoint presentations by Toyota and part manufacturers related to proposed fixes for “sticky pedals.” Except for one recent report, the documents did not include any analyses that purported comprehensively to test and analyze possible electronic causes of sudden unintended acceleration.

The only document Toyota produced that claims to address the phenomenon of sudden unintended acceleration in a systematic way is a February 2010 report on testing conducted by Exponent, a scientific and engineering consulting firm located in Menlo Park, California.¹⁷ This report was commissioned in December 2009 by Toyota defense counsel Bowman and Brooke, LLP. Exponent representatives told the Committee staff that Bowman and Brooke requested the report just days before its publication date of February 4, 2010, at approximately the same time that we sought substantiation of your claims about electronics testing. According to Exponent, at the time the report was written, testing was still on-going and an interim report like this one is not customary for the company.¹⁸

The report states that Exponent’s testing did not lead to observation of “any instances of unintended acceleration or any circumstances that might lead to unintended acceleration. To the contrary, imposing perturbations resulted in a significant drop in power rather than an

¹⁶ Letter from Chairman Henry A. Waxman and Subcommittee Chairman Bart Stupak to James E. Lentz, (Feb. 2, 2010) (hereinafter, “Lentz Letter”).

¹⁷ While Exponent has been involved in several high-profile investigations, including a survey of damages to the Alfred P. Murrah Federal Building after the Oklahoma City bombing and work on behalf of insurance firm Swiss Re in limiting the company’s claims exposure after the collapse of the World Trade Center, the company has also faced criticism from “engineers, attorneys, and academics who say the company tends to deliver to clients the reports they need to mount a public defense.” Exponent has, for instance, issued reports arguing that secondhand smoke does not cause cancer. *See Toyota calls in Exponent Inc. as hired gun*, Los Angeles Times, (Feb. 18, 2010).

¹⁸ Feb. 19, 2010, Committee Staff interview of Paul Taylor and Angela Steffen Meyer.

increase.”¹⁹ According to Exponent, when its researchers imposed a fault on a Toyota electronic throttle control system, “the vehicle entered a fail-safe mode consistent with descriptions provided in the technical manuals for Toyota and Lexus vehicles.”²⁰

On February 19, 2010, the Committee staff interviewed one of the primary authors of the Exponent report, Dr. Paul Taylor. He stated that the report did not examine any vehicles or components that consumers reported to have had unintended acceleration events. He also said that the study did not analyze the vehicles’ computer systems, seek to identify potential chip failures, examine software and programming of the vehicles’ electronic control modules, conduct any testing under differing environmental conditions, or assess the effects of electromagnetic or radio frequency interference on the electronic throttle control system. According to Dr. Taylor, these are not among his or his co-authors’ “areas of expertise.”²¹ Dr. Taylor said that Toyota’s counsel has hired other researchers at Exponent to conduct such tests of Toyota and Lexus vehicles, but Toyota did not request that Exponent provide interim reports on these additional studies.

On February 19, 2010, we sought a review of the Exponent report by two automotive engineering and safety experts, Dr. Michael Pecht, a professor of mechanical engineering at the University of Maryland and director of CALCE, and Neil Hannemann, an engineer with over 30 years of experience in automotive manufacturing, product design, and product development.²² These independent experts raised multiple concerns about the value of the Exponent report.

A. Small Sample Size

Exponent tested only six Toyota and Lexus vehicles and a series of individual parts, including pedal assemblies and engine control modules. According to Dr. Pecht, this small sample is unlikely to identify the cause of a rare and intermittent problem such as sudden unintended acceleration:

it is well known that the phenomenon of sudden acceleration, while often deadly, is not so widespread that such simple tests with such extremely small sample sizes would undercover the root cause. For example, Toyota recalled some 2.3 million throttle pedal assemblies to eliminate excess friction between two pieces of the accelerator mechanism. This was apparently based on less than 1,000 complaints by customers. If we assume a similar fault rate for the “selected failure

¹⁹ *Testing and Analysis of Toyota and Lexus Vehicles and Components for concerns Related to Unintended Acceleration*, Exponent, Inc., (Feb. 4, 2010), at 15, TOYEC_00003197.

²⁰ *Id.*

²¹ Feb. 19, 2010, Committee Staff interview of Paul Taylor and Angela Steffen Meyer.

²² Letter from Chairman Henry A. Waxman and Subcommittee Chairman Bart Stupak to Dr. Michael Pecht, (Feb. 19, 2009); Letter from Chairman Henry A. Waxman and Subcommittee Chairman Bart Stupak to Neil Hanneman, (Feb. 19, 2009).

conditions” that Exponent studied, then Exponent should have been testing 1000’s of cars instead of 6 to precipitate the problem with any acceptable degree of confidence. . . . Exponent did not analyze an adequate sample, both in number and type of vehicles, to reach conclusions about the potential causes of unintended acceleration in Toyota vehicles. In fact, they never tested more than 1 of any particular model year type of vehicle.²³

B. Failure to Test for Potential Causes

Both experts reported that Exponent failed to conduct an appropriate analysis of the causes of sudden unintended acceleration. As a result, they determined that the study was unable effectively to reach conclusions about whether Toyota vehicles may have flaws that cause unintended acceleration.

According to Mr. Hannemann, “this report does not follow a scientific method. . . . [I]t is not clear if the testing is appropriate to the issue, since the extent of the problem was not defined. . . . To even have a conclusion with such a poorly stated problem is inappropriate.”²⁴ Dr. Pecht reached a similar conclusion:

Exponent did not provide a methodology which showed that they identified the potential causes of unintended acceleration in Toyota vehicles. Exponent did not conduct a fault tree analysis, a failure modes and effects analysis (FMEA) . . . or provide any other scientific and rigorous study to describe all the various potential ways in which a sudden acceleration event could be triggered. This would be necessary to plan and ensure that the testing and analysis was complete, thorough and of value. Exponent appeared to have only focused on some simple and obvious failure causes and did not provide any rationale to rule out other potential causes (e.g., software).²⁵

C. Failure to Test for Real World Conditions

Both experts also observed that because Exponent conducted only limited tests on vehicles or components in isolation and did not test under varying environmental and driving conditions, these tests were unlikely to be of value in determining the causes of sudden unintended acceleration. According to Mr. Hannemann:

²³ Letter from Michael Pecht to Chairman Henry A. Waxman and Subcommittee Chairman Bart Stupak, (Feb. 21, 2010) (hereinafter, “Pecht Letter”).

²⁴ Letter from Neil Hanneman to Chairman Henry A. Waxman and Subcommittee Chairman Bart Stupak, (Feb. 21, 2010) (hereinafter, “Hanneman Letter”).

²⁵ Pecht Letter.

there are also major categories of testing that were not addressed such as EMI/RFI (electromagnetic interference/Radio frequency interference), environmental conditions, and underhood operating environment conditions.²⁶

Mr. Hannemann also found that “[T]his evaluation seems limited primarily to the electrical signals of two sets of sensors. There appears to be no attempt to evaluate the ETCS-i as a system. . . . There was no testing or analysis of the throttle body hardware, the wiring, the ECM, or the software.”²⁷

Dr. Pecht reported:

the tests did not consider potential reliability issues arising from various conditions and combinations of use, operation and the environmental loads (e.g. temperature, temperature changes, humidity, contamination, EMI, radiation), representative of an appropriate sample of real-world driving conditions. Common mode failures were not considered and the load conditions on the vehicles were all benign.²⁸

D. Conclusions of the Independent Experts

Dr. Pecht and Mr. Hannemann reached similar conclusions about the value of the Exponent report, each finding that as a result of its limitations, the report is of little value in understanding the potential causes of sudden unintended acceleration. Dr. Pecht informed the Committee that he “would not consider this report to be of value to the Committee, to NHTSA or to Toyota in getting to the root causes of sudden acceleration in Toyota vehicles.”²⁹

Similarly, Mr. Hannemann concluded:

[T]here are major flaws in the methodology and almost nothing added to the overall understanding of the concerns of the unexpected acceleration phenomenon that is the subject of a massive Toyota recall. . . . [T]his report alone does very little to prove that there are no other causes of unexpected acceleration in Toyota vehicles.³⁰

III. **Toyota’s Public Statements**

On February 1, 2010, Toyota announced that it had found the solution to the problem of sudden unintended acceleration. In multiple appearances on national television, you said that

²⁶ Hanneman Letter.

²⁷ *Id.*

²⁸ Pecht Letter.

²⁹ *Id.*

³⁰ Hanneman Letter.

Toyota has “studied the events of unintended acceleration” and that it is “quite clear that it has come down to two different issues”: floor mats that entrap the accelerator and “sticky” accelerator pedals.³¹ On the same day, Toyota announced that it would replace the pedals on 2.3 million vehicles. You explained that Toyota is “very confident that the fix in place is going to stop what’s going on.”³²

Your public statements differed from private explanations that Toyota officials had given to Committee staff on January 27, 2010, which indicated that it was unlikely that “sticky pedals” would cause sudden unintended acceleration. For that reason, we asked in our February 2, 2010, letter that you provide the Committee with “any analyses and documents that support a conclusion that ‘sticky pedals’ have caused sudden high-speed acceleration.”³³ The letter requested that Toyota provide a response by February 5, 2010.

Toyota did respond on February 5, 2010, but the company did not produce any analyses that showed how “sticky pedals” could cause sudden unintended acceleration. To the contrary, it confirmed in a cover letter from outside counsel Theodore Hester that a sticky pedal “[t]ypically ... does not translate into a sudden, high-speed acceleration event.”³⁴ The letter also made clear that the recalls announced in the last several months provide remedies only for the high-speed sudden unintended acceleration events caused by floor-mat entrapment, and the lower impact, slow-to-idle events created by “sticky pedals.”³⁵ The causes of sudden unintended acceleration, Mr. Hester wrote, are “multiple” and “hard to identify.”³⁶

The letter did not explain why you would tell the public on February 1, 2010, that the recall of 2.3 million vehicles to replace “sticky pedals” would “fix . . . what’s going on” if Toyota had no studies linking sticky pedals to sudden unintended acceleration.

Toyota’s own data also appear to conflict with the assurances that you gave on February 1, 2010. As noted above, the data from Toyota’s consumer complaint telephone line show that floor mats or pedal problems have been identified as the cause of only 16% of the sudden unintended acceleration reports received through the complaint line. Over 80% of the complaints do not identify either of these factors as causes of the reported problems. Furthermore, almost 70% of the sudden unintended acceleration events in Toyota’s customer call database involved vehicles that are not subject to the 2009 and 2010 floor mat and “sticky pedal” recalls.

³¹ *Today Show*, NBC, (Feb. 1, 2010).

³² *Squawk Box*, CNBC, (Feb. 1, 2010).

³³ Lentz Letter.

³⁴ Letter from Theodore Hester to Chairman Henry A. Waxman and Subcommittee Chairman Bart Stupak, (Feb. 5, 2010).

³⁵ *Id.*

³⁶ *Id.*

IV. Conclusion

Sudden unintended acceleration in vehicles is a serious and highly dangerous event. Our preliminary assessment is that Toyota resisted the possibility that electronic defects could cause safety concerns, relied on a flawed engineering report, and made misleading public statements concerning the adequacy of recent recalls to address the risk of sudden unintended acceleration. We hope that tomorrow's hearing provides the Committee with additional information about Toyota's response to incidents of sudden unintended acceleration over the past decade.

Sincerely,



Henry A. Waxman
Chairman



Bart Stupak
Chairman
Subcommittee on Oversight and
Investigations

cc: The Honorable Joe Barton
Ranking Member
Committee on Energy and Commerce

cc: The Honorable Greg Walden
Ranking Member
Subcommittee on Oversight
and Investigations