



Safety Research & Strategies, Inc.

340 Anawan Street / Suite 200
Rehoboth, MA 02769
Ph. 508-252-2333, Fax 508-252-3137
www.safetyresearch.net

February 24, 2014

David J. Friedman
Acting Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
West Building
Washington D.C., 20590

RE: Docket NHTSA-2014-0014

Dear Acting Administrator Friedman:

The following is a response to NHTSA's request for comments in advance of finalizing its 2014 – 2018 Strategic Plan.

Safety Research & Strategies is a multi-disciplined group specializing in product safety with particular expertise in motor vehicle issues. Our company provides fact-based information, analyses, data, and strategies for addressing harm caused by potentially defective products and practices for a wide range of clients including attorneys, engineers, supplier and technology companies, and government.

According to NHTSA Docket 2014-0014:

“The National Highway Traffic Safety Administration (NHTSA) is currently finalizing its 2014-2018 strategic plan, and announces that it will hold a public listening session to solicit public comment on emerging or potential traffic safety problems and solutions. Public feedback will assist the agency in preparing to meet the challenges it faces in the next 5 years on improving motor vehicle and traffic safety in the United States. This notice invites comments, suggestions and recommendations from all individuals and organizations that have an interest in motor vehicle and highway safety, consumer programs (e.g., fuel economy, vehicle theft, odometer fraud, tire performance) administered by the agency, and/or other NHTSA activities. NHTSA will give a brief overview of the plan, and then interested organizations will be provided 10 minutes to present comments to the agency. Alternately, organizations and individuals may provide comments to the docket.”

February 24, 2014

Rather than exercise the 10 minutes allocated to respond following a brief overview of the plan, below please find our written comments and recommendations for consideration.

Enforcement Activities: Developing Sound Processes and Practices

Among the high-stakes functions of NHTSA are its enforcement activities – conducting investigations into safety defects and regulatory compliance. The agency’s decisions in these two areas can cost manufacturers millions of dollars, and save lives or cost lives, by allowing a serious defect to go unremedied. Despite the critical nature of these functions, both the General Accounting Office and the DOT’s Office of the Inspector General have criticized the agency for the lack of established practices in its investigations, data collection and recalls. These problems continue today.

Areas of Concern:

- **NHTSA uses an unstructured process for determining defects and inconsistent or nonexistent criteria for initiating defect investigations.**
- **NHTSA makes poor use of available data and refuses to consider information from sources outside the agency or the manufacturer.**
- **NHTSA focuses on defects that are easily and inexpensively remedied, frequently ignoring more complicated and dangerous defects.**
- **NHTSA has no mechanism to determine the adequacy and scope of a recall and is slow to analyze recall data to determine if defects are being repaired.**

NHTSA uses an unstructured process for determining defects and inconsistent or nonexistent criteria for initiating investigations: In 2002, the OIG found inconsistencies in how ODI makes the decision to investigate. The agency might go after one manufacturer for an alleged defect, while not bothering to investigate others with as many or more complaints of the same type of defect. Or, the OIG wrote, “ODI’s decision to open or not open an investigation was not consistent with the seriousness or frequency of the complaint.”¹ This continues today and is exemplified in an internal email, now public, from Toyota’s then-manager for Technical and Regulatory Affairs Chris Santucci regarding the agency’s investigation of unintended acceleration:

“I have discussed our [Toyota] rebuttal with them [NHTSA], and they are welcoming of such a letter. They are struggling with sending an IR [Information Request] letter,

¹ Review of the Office of Defects Investigation, DOT OIG, January 2002

because they shouldn't ask us about floormat issues because the petitioner contends that NHTSA did not investigate throttle issues other than floormat-related. So they should ask us for non-floormat related reports, right? But they are concerned that if they ask for these other reports, they will have many reports that just cannot be explained. And since they do not think that they can explain them, they don't really want them..."²

NHTSA makes poor use of limited data and refuses to consider information from sources outside the agency or the manufacturer: In 2002, the OIG found that NHTSA made investigation decisions based on data from two sources: consumer complaints to the agency and complaints to the manufacturer which are submitted via the Early Warning Reporting requirements. It recommended that NHTSA seek out other sources: trial lawyers, safety advocates, and insurance companies.³ NHTSA continues to rely on consumer complaints to its own database (selectively as noted above) and information provided by manufacturers, but typically dismisses any information coming from a source outside of its default data.

In addition, there are significant limitations to the Early Warning Reporting (EWR) data NHTSA receives and relies on. Some of these limitations were addressed by the National Academy of Sciences Committee on Electronic Vehicle Controls and Unintended Acceleration.⁴ For example, the NAS observed that "unintended acceleration could be categorized under the code for the service brake, speed control, power train, or a number of other components. Similarly, conditions that have little to do with unintended acceleration, such as stalling or hesitation due to transmission problems, may be categorized under the code vehicle speed control... ODI analysts noted that the EWR data lack the detail needed to be the primary source for monitoring the fleet for safety defects and that the main use of these data (especially the field reports) has been to support defect monitoring and investigations by supplementing traditional ODI data."⁵

NHTSA's proposals for the EWR data would allow this demonstrated deficiency in detail to continue unabated.⁶ Despite the Toyota Unintended Acceleration crisis, nowhere in NHTSA Proposed Notice of Rulemaking is an amendment to include coding for unintended acceleration, or even for floor mat interference with vehicle speed controls.

² Email from Chris Santucci, Toyota Motor North America, Inc. to Takeharu Nishida; May 5, 2009

³ Review of the Office of Defects Investigation, DOT OIG, January 2002

⁴ The Safety Promise and Challenge of Automotive Electronics; National Research Council of the National Academies; June, 2012

⁵ The Safety Promise and Challenge of Automotive Electronics; Pgs. 114 -115; National Research Council of the National Academies; June 2012

⁶ Docket NHTSA-2012-0068; 77 FR 55606; Notice of Proposed Rulemaking; Early Warning Reporting, Foreign Defect Reporting, and Motor Vehicle and Equipment Recall Regulations; September 12, 2010

More recently, the agency rejected an amendment to MAP-21 which would require NHTSA to add to its defect investigation files information that it receives from outside organizations – a practice that was common for decades at the agency.⁷

NHTSA focuses on defects that are easily and inexpensively remedied, frequently ignoring more complicated and dangerous defects: To cite one important example, NHTSA has been highly focused on floor mat entrapment as a cause of unintended acceleration. In December, NHTSA advanced a two-year-old investigation into unintended acceleration in Ford Fusion and Mercury Milan vehicles up to an Engineering Analysis, due to floor mats that were suspected of entrapping the accelerator pedal.⁸ SRS analyzed all speed control complaints from NHTSA Vehicle Owner Questionnaire database involving the 2008-2010 Ford Fusion. Out of 161 such consumer complaints, seven reported floor mat interference, 48 reported unintended accelerations, not associated with floor mat entrapment and 92 owners reported that the Fusion suddenly decelerates – even at highway speeds – with the engine still running.⁹ The latter type of complaint is more numerous, but maybe more complex to investigate.

NHTSA has no set procedure to determine the adequacy of a recall and is slow to analyze recall data to determine if defects are being repaired: There are no set targets for recall completion rates, and therefore little incentive for manufacturers to try to remedy defects for most of the population still in the fleet and in a timely manner. In the short term, NHTSA does not track repair rates to ensure recall effectiveness nor does the agency ensure that 573 submission reporting requirements are followed. While the agency does require manufacturers to file quarterly reports showing the number of vehicles remedied, and occasionally opens Recall Queries (RQ) – investigations to assess recall effectiveness – there is evidence that NHTSA does not appear to employ a systematic process to catch low repair rates in a timely fashion. One glaring example involves U.S. Bus Corporation which had filed 21 defect and non-compliance reports to the agency between 2001 and 2007 and followed up with quarterly reports that indicated a very low rate of repair.¹⁰ It took the agency years to notice that the New York school bus manufacturer was not actually making any repairs and take action against it – even though the defects were serious, and widespread. NHTSA did not take action until 2009.¹¹

NHTSA recently proposed to provide a Vehicle Identification Number look-up service for consumers to determine whether a specific vehicle has had a remedy applied.¹²

⁷ Support Blumenthal Amendment 1727 Allowing Consumer Complaint Information Disclosure; Center for Auto Safety fact sheet

⁸ Engineering Analysis 12-009; National Highway Traffic Safety Administration; December 12, 2012

⁹ Fixated on Floor Mats; The Safety Record Blog; January 3, 2013

¹⁰ 74 FR 48624 - Public Hearing To Determine Whether Transportation Collaborative, Inc. (TCI) Has Met Notification and Remedy Requirements; NHTSA; September 23, 2009

¹¹ 74 FR 48624 - Public Hearing To Determine Whether Transportation Collaborative, Inc. (TCI) Has Met Notification and Remedy Requirements; NHTSA; September 23, 2009

¹² Docket NHTSA-2012-0068; 77 FR 55606; Notice of Proposed Rulemaking; Early Warning Reporting, Foreign Defect Reporting, and Motor Vehicle and Equipment Recall Regulations; September 12, 2010

However, the proposed rule eliminates the quarterly reporting requirements for manufacturers that opt in to the VIN look-up service to report summary recall completion data. NHTSA's proposal notes that this service "will be providing daily information from which the agency can determine completion information."¹³ Yet such information will thereby become unavailable to the public and independent researchers. Such reports have proven very valuable in assessing the efficacy of existing recall remedies. In particular, they are potentially helpful in identifying failed recalls.

Four Assessments of NHTSA's Enforcement Activities

Two automotive safety crises have spotlighted the inadequacy of NHTSA's investigative process (as well as the agency's lack of regulatory framework which could have prevented the crises – see "Toyota Unintended Acceleration: Learning from Crises and Moving Forward," S. Kane, presentation to National Academy of Sciences, June 13, 2011). In 2000, it was the Ford Explorer/Firestone Wilderness tire debacle. In the 1990s, America's best-selling SUV, the Ford Explorer, equipped with original equipment Firestone tires, was prone to fatal rollovers after tread separations at highway speeds. But a series of gruesome high-profile crashes and news stories about the safety of Ford Explorers and Firestone tires triggered Congressional hearings. (This important safety problem continues to this day, albeit with different tires, with many more fatalities than were known at the time of the original scandal.¹⁴) In 2009, the Toyota Unintended Acceleration crisis broke open after Mark Saylor, a California Highway Patrol Officer, his wife, 12-year-old daughter and brother-in-law died in a fiery crash caused by unintended acceleration. Saylor was driving a rented Lexus, which NHTSA determined, could not be slowed after the all-weather floor mat entrapped the accelerator pedal. Following are summaries of the assessments NHTSA's enforcement activities by the OIG and GAO following the Ford/Firestone and Toyota crises.

Review of the Office of Defects Investigation, DOT OIG, January 2002:

This evaluation found that NHTSA had very little in the way of a standardized process. Specifically, it said that ODI used an unstructured approach for analyzing data and determining if a potential defect existed; was limited by sparse and poor quality data. ODI had no methodology for analyzing complaints. The defect analysis procedures did not require ODI's defects analysis staff to notify senior management when they receive a complaint involving a serious injury so a timely decision to recommend or open an investigation can be made. NHTSA's Associate Administrator for Safety Assurance revealed that there were no specific processes or procedures for opening investigations.

¹³ Docket NHTSA-2012-0068; 77 FR 55606; Notice of Proposed Rulemaking; Early Warning Reporting, Foreign Defect Reporting, and Motor Vehicle and Equipment Recall Regulations; September 12, 2010

¹⁴ Fatal, Tire-related Crashes of Ford Explorers, Ford Explorer Sports, Mercury Mountaineers, and Mazda Navajos Through 2009; Quality Control Systems, Corp., http://quality-control.us/explorer_tire_fatalities.html; accessed July 15, 2013

Follow-Up Audit of the Office of Defects Investigation, DOT OIG, September 2004:

In 2004, the Office of the Inspector General released an audit showing that NHTSA was over-budget in implementing ARTEMIS while the system underperformed.¹⁵ Specifically, ARTEMIS didn't have the capability to perform advanced predictive analyses that can point out potential defect trends as intended.¹⁶ For example, the system could not automatically notify analysts if consumer-reported complaints and manufacturer-reported warranty claims are increasing due to vehicle steering problems.

NHTSA Has Options to Improve the Safety Recall Defect Process, General Accounting Office; June 2011:

This GAO analysis criticized NHTSA for not using recall repair rate data to analyze trends and institute best recall practices: "Based on our analysis of NHTSA data, without conducting a broader aggregate level analysis to look for outliers, patterns, or trends, the agency may be missing an opportunity to identify underlying factors that affect recall campaign completion rates."¹⁷ It also revealed that NHTSA has no set procedures to determine if a manufacturer has adequately met its recall obligations. The agency told the GAO that "they evaluate the effectiveness of a recall campaign by comparing a specific recall campaign's progress to similar campaigns based on factors such as the age of vehicles recalled and the number of vehicles recalled." The agency said that "monitoring recalls on a campaign-by-campaign basis provides them with the flexibility necessary to capture the unique aspects of each recall campaign and that by focusing on communication and discussion with manufacturers, the agency can develop solutions to improve completion rates when a campaign is achieving a completion rate that is below its expectation."

Process Improvements are Needed for Identifying and Addressing Vehicle Safety Defects; DOT OIG; October 2011:

This review found ODI's practices deficient in several areas. NHTSA's system (ARTEMIS) did not track whether complaints are reviewed within established timelines or used to support an investigation, so ODI did not use it to provide evidence supporting potential defects. The agency failed to thoroughly document Defect Assessment Panels decisions on which risks to investigate. The agency, which does not own its own test facilities, had no systematic process for determining when to involve third-party or Vehicle Research and Test Center

¹⁵ Follow-Up Audit of the Office of Defects Investigation, Department of Transportation Office of the Inspector General, September 2004

¹⁶ Follow-Up Audit of the Office of Defects Investigation, Department of Transportation Office of the Inspector General, September 2004

¹⁷ NHTSA Has Options to Improve the Safety Recall Defect Process, General Accounting Office; June 2011

(VRTC) for assistance. The agency did not followed timeliness goals for completing investigations.

Lack of Transparency

NHTSA is increasingly closing its doors to the consumers they are mandated to protect while working in secret with manufacturers – which agency officials have called their “regulatory partners.”¹⁸ Access to NHTSA’s investigations and data are increasingly difficult and expensive for the public and researchers as the agency assigns significant costs to provide information in response to FOIA requests. In some cases they have also refused to release information that should be public requiring FOIA litigation that has cost the Agency thousands of tax-payer dollars to settle. In an October 2011 audit, the Department of Transportation’s Office of the Inspector General criticized the Office of Defects Investigation’s lack of documentation and transparency, which could potentially undermine the public confidence in its actions.¹⁹ As a public health agency, NHTSA must gain public trust to effectively communicate health threats. Secrecy is detrimental to safety and anti-consumer, exposing all motorists, passengers and pedestrians to harm.

Areas of Concern:

- **NHTSA routinely conducts secret, unofficial investigations.**
- **NHTSA employs diverse strategies to keep the public from seeing the factual underpinnings of its actions and decisions.**
- **NHTSA abuses the Freedom of Information Act Process.**

NHTSA routinely conducts secret, unofficial investigations: Once NHTSA makes a formal decision to investigate a potential defect, it is assigned an internal number, and the agency’s record retention and public disclosure obligations apply. But the Office of Defects Investigation (ODI) now routinely conducts unofficial investigations, allowing it to keep its actions secret. For example:

Toyota Prius unintended acceleration: On his way to testify before Congress the Federal Energy Regulatory Commission’s Director of the Office of Electric Reliability, Joseph McClelland experienced multiple unintended acceleration events in his personal Toyota Prius. Mr. McClelland, an electrical engineer, with

¹⁸ What Doesn’t NHTSA Want You to Know About Auto Safety? Just About Everything; Sean Kane; Bloomberg/BNA Product Safety & Liability Reporter; April 23, 2012

¹⁹ Process Improvements are Needed for Identifying and Addressing Vehicle Safety Defects; Department of Transportation Office of the Inspector General; October 2011

oversight of the cyber-security of the U.S. electric grid, reported this dangerous scenario to NHTSA in May 2011. NHTSA dispatched two ODI engineers to his home and in a test drive they observed first hand that the vehicle would accelerate with no driver input and no fault codes. Vehicle data was recorded in Mr. McClelland's garage which showed zero voltage at accelerator pedal and the engine racing – i.e., clear evidence of an electronic defect.²⁰ The engineers videotaped these incidents and captured real-time engine control module data as they occurred. The agency admitted that what they observed was not the result of any “known causes” of UA. Neither McClelland's complaint nor the agency inspection and these important findings were in the public record²¹ yet Secretary of Transportation Ray LaHood assured the public there were no electronic faults in Toyota's.²² SRS learned of the incident and inspection (and obtained a sworn statement from Mr. McClelland). However, we were required to file a FOIA lawsuit to obtain the data and documents.²³ In settling the lawsuit NHTSA ultimately claimed it no longer had the important diagnostic data it had downloaded from Mr. McClelland's vehicle as it was actually experiencing uncommanded, high RPMs, and provided only heavily edited videotapes and paid SRS's legal fees.

Chevy Volt fires: On June 2, a Chevy Volt that had been damaged in a NHTSA contracted crash test caught fire in a storage facility, caused by intrusion into the lithium ion battery which ruptured the coolant line. NHTSA and General Motors secretly investigated the fire together for five months, before NHTSA opened a low-level defect investigation – Preliminary Evaluation (PE) 11-037.²⁴ The agency put no documents in the public file, except for the Opening Resume and the investigation was made public only after a report on the fire was leaked to the press.

Evenflo child seats: In January 2007, NHTSA secretly tested the claims of a Consumer Reports article charging that the Evenflo Discovery infant carrier could get knocked off the base in a side impact, after publicly criticizing its test methodology and results.²⁵ NHTSA's secret probe included collecting data and seeking records of other fatal incidents. Later, NHTSA's side impact crash tests showed that the carrier could be knocked off the base. Evenflo recalled 1.1 million Discovery infant carriers. No investigation was officially opened, no documents were made public; Evenflo was permitted to file a Defect and Noncompliance Notice without a chronology of how the defect was discovered –

²⁰ Sworn Statement of Joseph H. McClelland

²¹ SRS email communications with NHTSA RE: McClelland incident

²² U.S. report finds no electronic flaws in Toyotas that would cause Acceleration; Peter Whoriskey; Washington Post; February 9, 2011

²³ Lawsuit Seeks Records from Toyota Investigation; Bill Vlasic; New York Times, Jan. 24, 2012

²⁴ Preliminary Evaluation (PE) 11-037; NHTSA; November 25, 2011

²⁵ The Safety Record Special Report: How Consumer's Union Shocking Child Seat Tests Forced the Recall of the Evenflo Discovery; Safety Research & Strategies; May 14, 2013

which is part of the statutory requirement.²⁶ This was learned only after FOIA litigation was filed by SRS and NHTSA turned over previously undisclosed records (and settled the litigation and agreed to pay our legal fees).

NHTSA employs diverse strategies to keep the public from seeing the factual underpinnings of its actions and decisions: These strategies include allowing manufacturers to hide behind a FOIA exemption for Confidential Business Information, even when it is not warranted, redacting documents with a heavy hand, failing to disclose or delaying disclosure, and charging high fees to obtain documents.

NHTSAs' reports on Toyota UA, *Technical Assessment of Toyota Electronic Throttle Control (ETC) Systems* and *Technical Support to the National Highway Traffic Safety Administration on the Reported Toyota Motor Corporation Unintended Acceleration Investigation* were released with many areas heavily redacted or unavailable, making it impossible for any independent expert or organization to determine how NHTSA and its contract agency, the NASA Engineering and Safety Center (NESC), reached critical conclusions. Some of the information is not proprietary; and much of the information is related to systems that have been obsolete for years.²⁷ NHTSA also failed to reveal that it used Toyota's defense litigation experts to perform a warranty analysis to determine whether there was evidence of any trends suggesting a problem related to the ETC system or components."²⁸

NHTSA misuses the Freedom of Information Act Process: Despite President Obama's January 2009 Executive Order directing the all federal agencies to "adopt a presumption in favor" of FOIA requests,²⁹ and assurances by former Secretary of Transportation Ray LaHood promotion of transparency,³⁰ NHTSA does not appear to be following this directive. The agency routinely fails to place public documents in the public file, forcing citizens to submit FOIA requests to obtain them. NHTSA then attaches high costs to their release.

For example, in December 2010, Secretary Ray LaHood announced that NHTSA had levied \$32.4 million against Toyota for failing to launch a timely recall of its floor mats and, unrelated to unintended acceleration, of defective relay rods in Toyota pick-up trucks. These were the largest fines in agency history. NHTSA issued two press releases,

²⁶ The Safety Record Special Report: How Consumer's Union Shocking Child Seat Tests Forced the Recall of the Evenflo Discovery; Safety Research & Strategies; May 14, 2013

²⁷ Technical Support to the National Highway Traffic Safety Administration on the Reported Toyota Motor Corporation Unintended Acceleration Investigation; NASA Engineering Safety Center

²⁸ Subject: ETCSi Warranty Data; Memorandum from Subbaiah V. Malladi, Exponent, Inc. to Jeff Quandt, NHTSA; June 28, 2010

²⁹ Freedom of Information Act; Memorandum for the Heads of Executive Offices and Agencies; President Barack Obama; January 21, 2009

³⁰ Response By Toyota And The National Highway Traffic Safety Administration To Incidents Of Sudden Unintended Acceleration; hearing before the Oversight And Investigations Subcommittee Of The House Energy and Commerce Committee; February 23, 2010

but it did not make any supporting documents in the latter violation until a year later. The agency has not made public any documents related to the Timeliness Query for the defective steering relay rods recall (which was the result of findings in civil litigation in the death of an 18-year old). SRS submitted a FOIA for these documents in order to write an article about the reasons for the fine. However, the agency responded that their release would cost \$4,500.³¹

Secrecy is sure to bring about new failures to provide timely warnings of potential vehicle defects to the public, just as secrecy brought about the Explorer/Firestone scandal in 2000 and the Toyota unintended acceleration scandal in 2010. In both instances, Congressional investigations showed the agency had clear indications of vehicle defects causing deaths and injuries long before taking appropriate action.

Lack of Functional Safety Requirements for Vehicle Electronics

The era of safety-critical, vehicle control systems that are solely mechanical is nearly history. The mechanical components that opened the throttle, applied the brakes, and steered the vehicle are now integrated with complex electronics. In a presentation before the National Academies of Science, Professor Todd Hubing of Clemson University International Center for Automotive Research pointed out that the average F35 Joint Strike Fighter jet has 5.7 million lines of computer code, while today's typical luxury car has approximately 100 million lines of computer code.³² NHTSA has not kept up with these trends. The Agency is has failed to adjust its regulatory and enforcement activities partly because it is compromised by a lack of technical knowledge.³³ Electronics remain a largely unregulated area of vehicle safety, even as they dominate vehicle systems fleetwide and the agency pushes forward on V2V and autonomous vehicle strategies. NHTSA's engineers remain mired in a broken parts mentality that does not take into account the need for functional safety – design strategies that ensure the driver can stay in control when electronic components fail.

Areas of Concern:

- **NHTSA has not taken steps to ensure the functional safety of electronic components that control today's vehicles.**

³¹ Freedom of Information Act (FOIA) Request #ES13-000110; Andrew DiMarisco; NHTSA; January 24, 2013

³² Ensuring the Electromagnetic Compatibility of Safety Critical Automotive Systems; Todd Hubing; presentation; May 17, 2011

³³ The Safety Promise and Challenge of Automotive Electronics: Insights from Unintended Acceleration; Pg. 12; Committee on Electronic Vehicle Controls and Unintended Acceleration, Transportation Research Board; January 18, 2012

- **NHTSA needs to change its approach to regulation and enforcement to ensure that when electronic failures occur they do not result in a loss of vehicle control.**

NHTSA has not taken steps to ensure the functional safety of electronic components.

Functional safety entails eliminating or reducing unreasonable risks to individuals caused by the potential malfunction of electronic or electrical components. It focuses on the risks arising from random hardware faults as well as systematic faults in system design, hardware and software development or in production. In automobiles, this applies to safety systems that prevent crashes, such as mandated Electronic Stability Control (ESC) or anti-lock brakes (ABS), as well as to restraint systems such as airbags, which react post-crash to mitigate crash injuries.³⁴

While NHTSA has established regulations involving electronic systems, like FMVSS 126, which requires light vehicles to be equipped with Electronic Stability Control systems, it has not established a functional safety standard that would ensure that electronic components are designed and manufactured to fail safely. For example, in April 2010, General Motors recalled 40,000 Corvette vehicles from the 2004 and 2005 model years equipped with tilt and telescoping steering columns because a malfunction in the Steering Wheel Position Sensor could corrupt the signals in the vehicle's Electronic Stability Control system causing it to apply the brakes to one or more rear wheels.³⁵ This unexpected braking could put the vehicle into a spin. In this instance, a steering sensor did not fail safely. Instead, the design allowed a sensor signal to activate the electro-mechanical brakes causing unexpected and dangerous vehicle behavior that the driver is called upon to correct in an emergency situation. Frequently, when these types of failures occur there is no forensic evidence of the electronic control failure. This often leaves investigators with unexplained crashes or to conclusions that allege driver error.

On March 14, 2013, Honda recalled nearly 250,000 vehicles for a malfunction in the Vehicle Stability Assist system (Honda's ESC system) that caused vehicles to inadvertently brake when the vehicle was underway at highway speeds. Massachusetts resident Carrie Carvalho experienced this on October 10, 2010, as her car was going 45 miles per hour. Her Honda Pilot came to a halt and traffic swerved to avoid her. Carvalho's persistence in reporting the defect to NHTSA led to an investigation and the recall for sensor failure. But her experience exemplifies the risks of failing to require the mandated ESC system follow functional safety guidelines to prevent loss of control when a component in the system fails. Certainly, drivers cannot be responsible to overcome failures in critical safety system that may result in a crash within seconds or fractions of seconds from the loss of control. Nor should failures in safety critical control functions simply become the accepted norm for the operations of hundreds of millions of motor vehicles.

³⁴ Executive Summary Functional Safety in Accordance with ISO 26262; ZVEI German Electrical and Electronics Manufacturers Association; Electronic Components and Systems Division; 2012

³⁵ Recall 10V172; Notice of Defect and Noncompliance; General Motors, April 26, 2012

The industry has developed a voluntary standard which may serve as a model for federal regulation - ISO 26262.³⁶ The ten-volume, 450 page standard, developed by a working group within the International Standards Organization, included members from nine countries concerning functional safety throughout the product's entire lifecycle from development to implementation, to servicing to decommissioning. Published in November 2011, the voluntary guidelines enumerate four different Automotive Safety Integrity Levels (ASIL) A through D, with the latter being the most stringent.³⁷

NHTSA should be looking at functional safety in much the same way it designates regulations – at all stages of the failure process:

- Pre-Failure: Component level and component interaction testing, certification and ratings.
- At-Failure: Ensuring minimum levels of failsafe for safety critical electronic designs.
- Post-Failure: Electronic data recorders for crash data as well as control systems diagnostic data, surveillance of safety data, examining past investigations to avoid repeating mistakes and improving outcomes of countermeasures.

NHTSA needs to change its approach to regulation and enforcement to ensure that electronic failures do not result in loss of driver control. The agency's thinking is still governed by a broken parts mentality that influences its actions in dealing with electronic systems. For example, in 2013, NHTSA published a Notice of Proposed Rulemaking amending FMVSS 124 Accelerator Controls for the first time in 40 years. The proposal would require automakers to install brake throttle override systems which allow the brake to override the accelerator when the two commands are simultaneous and in conflict. Brake-Throttle-Override systems are electronic and are designed to work with electronic throttle control systems, yet NHTSA wrote the regulation to cover “a serious safety situation where a pedal becomes entrapped by a floor mat or no longer responds to driver release of the pedal because of some other obstruction or resistance”³⁸ – meaning only the mechanical causes of unintended acceleration.

Furthermore, rulemaking is the process by which NHTSA develops institutional understanding of vehicle technology and functional outcomes. Without that critical step, automakers are left to self-regulate and NHTSA is left behind the technological curve. When NHTSA is called upon to investigate a defect or accept a recall remedy, it may be

³⁶ Executive Summary Functional Safety in Accordance with ISO 26262; ZVEI German Electrical and Electronics Manufacturers Association; Electronic Components and Systems Division; 2012

³⁷ Executive Summary Functional Safety in Accordance with ISO 26262; ZVEI German Electrical and Electronics Manufacturers Association; Electronic Components and Systems Division; 2012

³⁸ Notice of Proposed Rulemaking; FMVSS 124; Accelerator Control Systems; National Highway Traffic Safety Administration; April 16, 2012

ill-prepared to do so.³⁹ In April, Hyundai-Kia recalled 1.9 million vehicles from the 2006-2011 model years for a brake switch failure, which could cause a variety of malfunctions, such as the ESC system might turn off, the shifter might stop working, and cruise control might not deactivate.⁴⁰

Multiple control system failures such as these were apparently present in an incident that happened to Lauri Ulvestad, the owner of a 2011 KIA Sorrento, who lost control for 60 miles at 115 mph along the north-bound corridor Interstate 35 in Harrison County, Missouri.⁴¹ The Missouri State Highway Patrol, which escorted Ulvestad until she was able to bring the vehicle to a stop, captured the event with an on-board camera. Ulvestad reported that her push-button ignition and her gear shifter were inoperable during the incident. She could not disengage the cruise control. NHTSA accepted Hyundai/Kia's remedy of a replacement switch. Yet this solution does not address the functional safety issue. A switch can fail. When a brake switch fails, it should not render a vehicle uncontrollable by engaging the cruise control, disengaging vehicle stability control, and interfering with gear shifting. NHTSA has not yet opened a public investigation into this potential defect.

Thank you for considering these comments. We would be pleased to provide NHTSA with additional details related to any of the above noted issues.

Sincerely,



Sean E. Kane

³⁹ Toyota Unintended Acceleration: Learning from Crises and Moving Forward; presentation before National Academies of Science; S. Kane, June 13, 2011

⁴⁰ Recall 13V113; Defect and Non-Compliance Notice; Hyundai/Kia; March 29, 2013

⁴¹ Driver of Runaway SUV - I Thought that was It; Today.com; August 28, 2012

February 24, 2014