INFORMATION SUBMISSION FOR NAS

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- Introduction -

Office of Vehicle Safety
National Highway Traffic Safety Administration

1.0 INTRODUCTION

NHTSA Overview

Within the Department of Transportation, NHTSA has the principal responsibility for promulgating regulations and administering programs to reduce fatalities and serious injuries resulting from crashes that occur on our nation's highways. This responsibility covers all aspects of highway driving, including passenger cars, trucks, buses, and motorcycles, as well as pedestrians and bicyclists.

NHTSA's principal focus of attention continues to be on the tried and true safety countermeasures of appropriate use of restraints in all vehicles and for all occupants, helmet usage for motorcyclists, proper training for our youth drivers, and especially behavioral management to stop drinking and driving and avoiding all distractions. We also continue to see the need to explore and research the safety benefits of emerging vehicle technologies that will serve to avoid crashes in the first place, such as lane departure warning and active brake assist systems.

We also invest a sizeable level of time and resources on the areas of fuel economy and alternative fuel research to do our part to reduce the nation's energy dependence on oil and to reduce the harmful environmental impacts of vehicles. We closely coordinate this effort with the Environmental Protection Agency (EPA).

Finally, NHTSA prides itself on the extensive use of data and sound science to manage our priorities and performance. The various data collection and analysis tools in the National Center for Statistics and Analysis (NCSA), such as the Fatality Analysis and Reporting System (FARS), as well as our Early Warning Reporting (EWR) and Safety Defects Investigation Program allow us to keep our finger on the pulse of roadway safety. In this latter area, we traditionally receive around 30,000 vehicle complaints from consumers each year, and we carefully review each one of these looking for any trend that may indicate a safety defect. In just the past 3 years, this effort has resulted in over 500 voluntary recalls affecting about 24 million vehicles across most manufacturers, both foreign and domestic. NHTSA has the most active defects investigation program in the world, with a record of influencing 2,800 recalls on 278 million vehicles since the inception of NHTSA's enforcement program.

Unintended Acceleration

In October 2009, at the urging of NHTSA, Toyota recalled 3.8 million vehicles to correct a defect that could lead to the accelerator pedal being entrapped by the floor mat. In the following weeks and months NHTSA decided that it needed to gain a deeper understanding as to whether certain possible electronic problems could also be causing unintended acceleration in Toyota vehicles. The agency began by contacting certain experts inside and outside of the government on electromagnetic interference. In January 2010, Toyota recalled an additional 1.1 million vehicles for the pedal entrapment issue plus another 2.3 million vehicles for a defect that could cause accelerator pedals to stick and result in UA.

Congress became very interested in the subject of UA in Toyota vehicles and committees in both houses held hearings on the subject in February and March of 2010. NHTSA concluded that it needed to formalize and expand the informal review it was doing of issues related to the electronic throttle control (ETC) in Toyota vehicles. NHTSA outlined two separate studies: a near-term study on possible vulnerabilities in the Toyota ETC system that could result in UA, and a long-term study on the possible causes of UA and the safety of electronic control systems across the motor vehicle industry.

NHTSA had an urgent need for additional funding in CY2010 to enable it to conduct these significant studies of unintended acceleration (UA). As a result of developing events, NHTSA outlined a plan, including the need to employ outside experts to conduct two reviews on the subject, conduct on-site vehicle inspections and document reviews related to the subject, and perform research on several possible measures that might help address the UA phenomenon.

For obvious reasons, the agency could not have anticipated these needs at the time of the FY2010 submission of budget recommendations, and available funding was not sufficient to address the need in CY2010. NHTSA estimated it needed an additional $3.445 million in FY 2010 to meet these needs. Similarly, the FY2011 budget recommendations were submitted before the above events, and the need for $1.4 million in FY 2011 was later identified to address this matter. NHTSA received the $3.445 million for FY2010; however the FY2011 budget remains unconfirmed under the Continuing Resolution as of the date of this document.

NHTSA submitted its FY2011 budget request also before the above described events. However NHTSA did anticipate the general need for additional resources, especially additional Full Time Positions (FTP) requirements. NHTSA asked for

an increase of 66 FTPs above the FY2010 enacted level, including 23 Full Time Positions (FTP) in the Vehicle Safety Program which were seen as needed to support work in the following areas: electrical vehicle safety, light vehicle and heavy duty truck fuel economy, and import surveillance of auto equipment coming into the US from foreign countries. These positions did not identify or include specific needs for electronic controls systems, electronics reliability, software, vehicle cyber security, etc.

NASA and National Academy of Sciences Studies

In CY2010 NHTSA initiated two separate but complementary independent studies regarding unintended acceleration and vehicle electronic controls.

NHTSA enlisted NASA to perform an engineering evaluation of baseline Toyota electrical system design information provided by Toyota and provide that analysis to NHTSA to examine whether there are any vulnerabilities in the electronic throttle system that can be identified and demonstrated in Toyota vehicles that might realistically be expected to produce UA in a consumer's use of those vehicles, and that would warrant opening a defect investigation.

NHTSA enlisted NAS to study the broad topic of electronic vehicle controls and unintended acceleration as a whole. This study was not directed or limited to a specific manufacturer, makes or models, but rather at the entire automotive industry. NAS was tasked to appoint a panel of experts to review possible sources of unintended acceleration, including electronic vehicle controls, human error, mechanical failure and interference with accelerator systems. These experts are tasked to look at software, computer hardware design, electromagnetic compatibility and electromagnetic interference as well as the limitations of tests to determine the causes of rare events. This study includes outcomes and recommendations for the entire agency, including the resources and expertise needed for the agency's research, rulemaking, data, and enforcement activities.

Through the implementation of the above studies and other events in CY2010, NHTSA Office of Vehicle Safety has identified the need to increase its existing expertise in vehicle electronics and emerging technologies throughout all four areas of Research, Enforcement, Rulemaking and the Data Center. Augmentation of this vehicle electronics and engineering expertise is needed to address the emerging electronics and software technologies and their implications for the

safety of the vehicle's occupants. Growing use of electronic control systems requires that NHTSA determine the need for establishing electronic safety standards and other requirements for vehicle control systems including cyber security of these systems and their intra and inter-vehicle communications. Additional resources may be needed to provide testing and analysis capability including electromagnetic interference, hardware, and software systems.

NHTSA awaits NAS's findings and recommendations in this area.

Vehicle Safety Offices and FY2010/FY2011 Budget Overviews:

Attached are overviews of the four offices that comprise NHTSA's Vehicle Safety Office, namely;

- National Center for Statistics and Analysis (NCSA)
- Vehicle Safety Research
- Vehicle Rulemaking
- Vehicle Enforcement

Each office is described with its organizational structure, mission, program activities, staffing, and FY2010 and FY2011 budget requests.