February 4, 2010

Alberto A. Jimenez, Chief
Correspondence Research Division
Office of Defects Investigation Enforcement
National Highway Traffic Safety Administration
400 Seventh Street S.W.
Washington D.C. 20590

Ref: NVS-26 et, Ref. No.:10137716

Sir:

I first wrote to your agency in 2005 regarding the erratic engine speed changes in my 2004 Lexus LS 430. Your response was dated Nov. 3, 2005. I greatly appreciate the attention that you gave to my report at that time.

Lexus did, finally, acknowledge my complaint and the mass air flow meter in the vehicle was replaced with a resulting reduction in the frequency of occurrence of the phenomenon.

I am writing to you now because of the current investigation and recall of certain Toyota products for unintended acceleration problems. I am a retired electrical engineer and I have considerable experience in the field of safety controls, their design and fault analysis. Further, I am not totally satisfied that the reports of related testing and investigation by Toyota represent an adequately comprehensive effort to completely resolve the issue.

Although I did not experience such radical excursions in engine power that my control of the vehicle was greatly threatened, the uncontrolled excursions in engine speed that I have experienced, may well be due to effects that also contribute to the unintended acceleration phenomenon. They both involve changes in engine power without driver input.

My vehicle has a 'drive-by-wire' throttle control system. My engineering experience and my knowledge of automobiles is such that I recognize that the environmental context that is characteristic of automobiles is quite severe for electronic systems. Further, the volume of production of automobiles is very large. Consequently, automotive safety-critical electronics must be designed to always retreat to an inherently safe condition when *any* component fails to meet system design specifications, especially wiring equipment.

One of the most troublesome elements of electronic systems is wiring connectors. Also, wiring device failures are often intermittent, potentially masking the problem until circumstances contrive to produce a dangerous situation. Although Toyota usually employs well designed connectors, the sheer number of manufactured units, combined with even a rare lapse in manufacturing or installation quality plus the stresses inherent in the hostile environment, dictate that there will be system component failures. Consequently, the system design must be such that those failures will not result in an unsafe system operating condition. Further, for critical applications, like throttle control, it would be wise to require a mechanical back-up mechanism to ensure that an un-

depressed accelerator pedal will quickly override a failed electronic system and shut off air to the engine.

The design of electronic systems, such as throttle controls, is much more difficult to analyze for possible failure mode response than their mechanical counterparts. In addition, the tendency of designers to incorporate system behavior nuances that electronics can accommodate increases system complexity and, thereby, the range of possible failure modes. Therefore, such system designs must be subjected to thorough (and expensive) design failure mode analysis/testing *before* being approved for production. Simply building a few prototypes and test driving them in cars is not adequate.

Thank you for your kind attention.

Sincerely,

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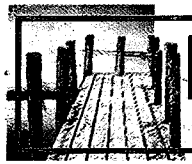
Belle mead, N.J. [redacted]



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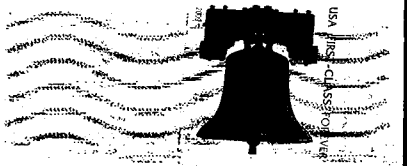


~~ALBERTO A. JIMENEZ~~

CORRESPONDENCE RESEARCH DIVISION
OFFICE of DEFECTS INVESTIGATION EN FORCEMENT
NHTSA
400 SEVENTH STREET S.W.
WASHINGTON, D.C. 20590