



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

1200 New Jersey Avenue SE
Washington, DC 20590

JAN 25 2008

Mr. Chris Tinto
Vice President
Technical and Regulatory Affairs
Toyota Motor North America, Inc.
Washington Office
601 Thirteenth Street, NW, Suite 910 South
Washington, DC 20005

NVS-212mjl
EA06-020

Dear Mr. Tinto:

On December 1, 2006, the National Highway Traffic Safety Administration's (NHTSA) Office of Defects Investigation (ODI) opened an Engineering Analysis (EA06-020) to investigate an alleged safety-related defect concerning the unintended closing of the power liftgates on approximately 142,000 Model Year (MY) 2004 and 2005 Toyota Sienna vehicles equipped with optional power liftgates and manufactured by Toyota Motor North America, Inc. (Toyota). During this investigation, ODI also collected and reviewed information on MY 2006 and 2007 Sienna vehicles equipped with optional power liftgates. Counting these vehicles, approximately 198,000 MY 2004 through 2007 Sienna vehicles (herein referred to as subject vehicles) were equipped with optional power liftgates before a December 2006 modification. ODI has now completed its investigation.

The liftgate is the large door on the rear of the vehicle. The liftgate is hinged on the top. When opened, the liftgate is supported by two liftgate struts, one on each side of the liftgate. The investigation revealed that the liftgate support struts in a number of subject vehicles have leaked internal gas that is critical to the operation of the strut. When there is sufficient leakage of the gas, a liftgate open to the full open position can drop and power-close under conditions in which the user of the vehicle reasonably anticipates that the liftgate will remain in the full open position. A person below the liftgate can be hit by the liftgate and injured. In fact, this has occurred.

The liftgate is heavy and requires a lifting force from the struts of about 218 pounds or more to open it and maintain it in the full open position. The force to maintain the liftgate in the full open position is provided by the liftgate struts. A pair of original equipment liftgate struts provide about 300 pounds of force—more than enough to keep the liftgate in the full open position. When gas leaks from the strut, the amount of force the struts produce decreases. When the force of the struts is between 195 and 218 pounds, the liftgate will not remain in the full open position in situations where the vehicle user expects that it will. Instead it will fall relatively slowly until it nears the full closed position, at which point the liftgate will drop rapidly. When



the force of the struts is less than 195 pounds, the liftgate will drop about ten inches from the full open position, and the automatic close feature will engage and the liftgate will shut completely. The less force the struts produce, the faster this initial drop will be, and eventually the liftgate will freefall until the automatic close feature initiates.

During the initial drop, the liftgate falls from a full open position and drops about ten inches. Any person standing underneath the liftgate who stands between five feet four inches and six feet two inches tall is in danger of being struck on the head by the falling liftgate. During this freefall, an object in the path of the liftgate could receive an impact between 140 and 300 pounds of force. During the automatic closing, the liftgate can also drop onto an unsuspecting person positioned in its path. The liftgate requires between 40 and 70 pounds of force in order to stop closing and automatically reopen. An unsuspecting person can be knocked to the ground or temporarily pinned by the closing liftgate until enough force is applied to reverse the movement of the liftgate.

ODI's analysis shows that the liftgate struts in the subject vehicles have been failing prematurely at a high and still increasing rate. There have been a significant number of performance failures of liftgate struts and more are expected. The complaint and warranty claim rates related to struts failing on MY 2004 and 2005 Sienna vehicles are particularly high based on reports received by ODI and Toyota: 240.1 complaints per 100,000 vehicles and 8.4 claims per 100 vehicles. In addition, analysis of Toyota's warranty claim data shows a steady increase in failures for each of the subject vehicles, including the MY 2006 and 2007 vehicles manufactured prior to implementation of the final liftgate strut design.¹

ODI believes the consequence of the strut failures—unexpected dropping and power-closing of the liftgate—poses an unreasonable risk of injury. When the liftgate power-closes unexpectedly, unsuspecting persons, especially children and elderly, standing in the path of a closing liftgate or reaching into the rear cargo area of the vehicle can be injured by being struck by the closing liftgate.

The unexpected dropping and power-closing of the liftgate due to the failure of the liftgate struts have caused approximately 70 reported injuries.² Although a majority of the injuries were minor soft tissue injuries such as bumps and bruises, several vehicle owners reported serious injuries. For example, a 50-year-old resident of Illinois suffered a cervical sprain and nerve damage when his liftgate unexpectedly closed on him while he was reaching into his rear cargo area. He continues to experience constant pain and loss of muscle strength as a result of the episode, and accrued \$50,000 in medical bills stemming from the incident so far. A 68-year-old resident of Utah suffered an injury to his rotator cuff and damage to his knee when his liftgate unexpectedly closed on him, jamming his knee against the rear edge of the vehicle. This individual still needs to undergo surgery on his knee, and has accrued \$18,000 in medical bills so far. A 51-year-old

¹ Initial (though limited) data regarding the MY 2007 Sienna vehicles manufactured with the final liftgate strut design indicate improved field performance (lower incidence of failure) for those MY 2007 Sienna vehicles. As a result, Siennas manufactured after Toyota implemented the final liftgate strut design are not included as subject vehicles.

² ODI has interviewed vehicle owners and confirmed an injury for many of these reports, including those that did not describe an alleged injury in the Vehicle Owner's Questionnaire reports.

resident of California suffered a concussion while standing under his liftgate as it was opening. He was apparently struck in the head by the liftgate during its initial freefall before the auto-close feature activated. Other owners report injuries such as a cut on the forehead and a sprained back. In addition, there are reports of injuries sustained when individuals were forced to the ground by contact with an unexpected liftgate closing.

Toyota responded that the subject vehicles have a jam protection feature that will reverse the direction of the closing (or opening) liftgate when an obstruction has been met. Toyota maintains that this feature, coupled with automatic initiation of the power close feature (which prevents freefall of the liftgate), are designed to promote safety. While these features may help promote safety in some situations, interviews with injured people and NHTSA testing show that the force required to reverse a power-closing liftgate by activating the jam protection feature is substantial. Clearly, the jam protection feature does not prevent the injuries, both minor and serious, inflicted upon the owners of vehicles with failed liftgate struts. ODI believes additional serious injuries will continue to occur if the alleged defect is not remedied.

To address the liftgate strut failures, Toyota implemented four changes to the design of the liftgate strut, the first in December 2003 (affecting early MY 2004 vehicles). The results from the first three changes were mixed—the first design change actually exacerbated the problem—and the failure rate of the liftgate struts remained high. Toyota implemented the final liftgate strut design changes in December 2006, which affects MY 2007 Siennas manufactured after implementation of this final design change.

Toyota's position is that the liftgate support struts are a "normal wear item." ODI disagrees. As an initial matter, Toyota does not list the liftgate struts in the owner's or service manual as a regular maintenance item. In previous investigations, ODI has considered specific reference to a service interval for a vehicle component or system in the owner's manual or maintenance manual as evidence that the component or system is a normal wear item requiring regular maintenance or replacement. Examples of components requiring regular replacement are brake pads and windshield wipers. The fact that the liftgate struts are not listed as a part requiring regular maintenance or replacement in Toyota's literature supports the conclusion that the failing liftgate struts are not normal wear items.

The real-world experience has shown that the liftgate struts in the subject vehicles do not appear to be performing to Toyota's expected life. The fact that the liftgate struts on the subject vehicles are failing at very high rates indicates a design defect in the liftgate struts. Toyota's several design changes and the results of these design changes on the performance of the liftgate struts buttress this conclusion—if the struts were not wearing out prematurely, a design change should not be necessary in order for the struts to meet Toyota's expected design life.

On the basis of the information collected during this investigation, ODI believes that the failure of the liftgate struts resulting in unintended or unexpected closing of the power liftgate in the subject vehicles constitutes a defect related to motor vehicle safety. The original liftgate struts on the MY 2004 through 2007 Sienna vehicles (manufactured prior to December 2006) exhibit a high early-life failure rate and a high and increasing failure trend. The failing liftgate struts pose

a risk of serious injury to persons standing under the liftgate or accessing the rear cargo area in these vehicles. Therefore, ODI requests that Toyota initiate a safety recall, in accordance with 49 U.S.C. § 30118-30120, to notify all owners, purchasers, and dealers of the problem and to provide a free remedy for each of the subject vehicles. Although we understand that Toyota has instituted an extended warranty program concerning this issue, we do not believe that program is sufficient to address the safety risks presented by the failure of the struts. A safety recall will ensure that vehicle owners have notice of those safety risks and an opportunity to obtain a remedy before the struts fail, preventing a significant risk of injury.

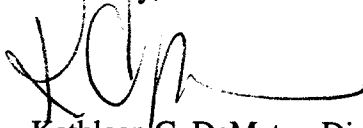
If Toyota decides not to conduct the requested recall, it must provide ODI with a full explanation for this decision, including any additional analysis of the problem beyond its past presentations. If Toyota fails to initiate a recall, the agency may proceed to an Initial Decision that these vehicles contain a safety-related defect. An Initial Decision would be accompanied by a Federal Register notice describing the alleged defect and the ODI investigation, the scheduling of a public meeting, and the issuance of a press release to inform the public regarding this matter.

ODI's recommendation that Toyota conduct a safety recall does not constitute a formal conclusion by NHTSA with respect to the evidence in our investigative file. Also, this recommendation does not constitute an initial or final decision that the subject vehicles contain a safety-related defect pursuant to 49 U.S.C. § 30118, or an order to recall those vehicles.

Toyota's written response to this letter, in duplicate, referencing the identification codes in the upper right hand corner of page 1 of this letter, must be submitted to this office no later than February 8, 2008. It is important that Toyota respond to this letter on time. This letter is being sent pursuant to 49 U.S.C. § 30166, which authorizes this agency to conduct investigations and require the submission of reports that may be necessary to enforce Chapter 301 of Title 49. Failure to respond promptly and fully to this letter may be construed as a violation of 49 U.S.C. § 30166, which could subject Toyota to civil penalties pursuant to 49 U.S.C. § 30165.

If you have any question regarding this letter, please contact Mr. Thomas Cooper of my staff, at 202-366-5218.

Sincerely,



Kathleen C. DeMeter, Director
Office of Defects Investigation
Office of Enforcement