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Toyota Motor Engineering & Manufacturing North America, Inc.

Vehicle Safety & Compliance Liaison Office Mail Code: S-104 19001 South Western Avenue Torrance, CA 90501

May 22, 2014

Ms. Nancy Lummen Lewis Associate Administrator for Enforcement National Highway Traffic Safety Administration Attn: Recall Management Division (NVS-215) 1200 New Jersey Ave, SE Washington, D.C. 20590

Re: Certain Lexus GS Vehicles Part 573, Defect Information Report

Dear Ms. Lewis:

ΓΟΥΟΤΑ

In accordance with the requirements of the National Traffic and Motor Vehicle Safety Act of 1966 and 49 CFR Part 573, on behalf of Toyota Motor Corporation ["TMC"], we hereby submit the attached Defect Information Report concerning a voluntary safety recall of certain Lexus GS vehicles to address an issue with the brake load sensing switches.

Should you have any questions about this report, please contact me directly.

Sincerely,

A. Sondat

Abbas Saadat Vice President Toyota Motor Engineering & Manufacturing North America, Inc.

Enclosures Part 573, Defect Information Report

DEFECT INFORMATION REPORT

1. <u>Vehicle Manufacturer Name</u>:

Toyota Motor Corporation ["TMC"] 1, Toyota-cho, Toyota-city, Aichi-pref., 471-8571, Japan

Affiliated U.S. Sales Company

Toyota Motor Sales, USA, Inc. ["TMS"] 19001 South Western Avenue, Torrance, CA 90501

Manufacturer of the Brake Pedal Load Sensing Switch

TOKAI RIKA CO., LTD. 3-260 Toyota, Oguchi-cho, Niwa-gun, Aichi-pref. 480-0195, Japan Telephone: +81-587-95-5211

Country of Origin: Japan

2. <u>Identification of Involved Vehicles</u>:

Based on production records, we have determined the involved vehicle population as in the table below.

Make/	Model	Manufac-	VIN		Production
Car Line	Year	turer	VDS	VIS	Period
Lexus/ GS	2013	TMC	*E1BL	D5008576 - D5019491	June 8, 2012 through December 26, 2012

Note: Although the involved vehicles are within the above VIN range, not all vehicles in this range were sold in the U.S.

No other Toyota or Lexus vehicles use the same brake pedal load sensing switch manufactured in a certain period in which insufficient soldering occurred in the brake pedal load sensing switch at the supplier.

3. <u>Total Number of Involved Vehicles</u>:

10,462 units

4. Percentage of Vehicles Estimated to Actually Contain the Defect:

Unknown

5. <u>Description of Problem</u>:

The brake pedal assembly in the subject vehicles contains a brake pedal load sensing switch which allows the brake system to detect brake pedal load applied by the driver. Due to insufficient soldering at the connection of a resistor to the terminal in the switch, there is a possibility that an open circuit could develop in the switch, and connectivity could be lost. If this occurs, the brake warning light will illuminate and the brake control system could initiate braking while driving, without activating the rear brake lights. This could result in unexpected moderate deceleration, increasing the risk of a vehicle crash.

6. <u>Chronology of Principal Events</u>:

January 2013

In January 2013, Toyota received a field technical report from a distributor in the Middle and Near East indicating that, during the port delivery inspection, a vehicle had illuminated ABS and TRAC warning lights and a DTC related to a malfunction of the brake pedal load sensing switch. The investigation of the returned switch found insufficient soldering at the connection of a resistor to the terminal in the switch, causing loss of connectivity and the illumination of the warning light. Toyota had not received any other reports indicating a similar condition; therefore it was presumed that this was an isolated case.

March 2013 - Mid May 2014

In March 2013, Toyota received a field technical report from the U.S. market indicating that the brake warning light illuminated while driving and the vehicle unexpectedly slowed down. Since then, by September 2013, five additional field technical reports were received from the U.S. market indicating similar conditions on the subject vehicles. Toyota investigated brake pedal load sensing switches returned from the vehicles linked to these reports and found insufficient soldering at the lead wire of a resistor on the switch circuit board. In addition, it was confirmed that all vehicles which experienced the phenomenon were manufactured in June and September 2012. An inspection of mass production switches revealed that current manufactured switches did not have similar solder conditions to those observed in failed parts returned from the field; therefore Toyota and the supplier began investigating the production process of the switch and its change history. It was found that the supplier's soldering process

was changed in June and again in November 2012 to improve the soldering quality. The investigation on the soldering condition before and after the process changes revealed that the amount of solder supplied to the solder bit could have decreased due to improper setting of the solder supply machine utilized between June and November 2012. Second, solder balls and/or soldering flux residue inadvertently created by the soldering process used during this time period could have dropped and accumulated on the soldering jig, causing the switch to be tilted during soldering. Third, due to inappropriate maintenance of the soldering bit during the same time period, the soldering could have been performed with a worn soldering bit. Under the latter two conditions, a larger gap between the soldering bit and terminal could cause heat not to transfer sufficiently to the terminal and create a poor solder connection. Replication testing was conducted using a soldering process with these conditions and revealed that the insufficient soldering observed in returned parts can be duplicated if the three conditions described above happen to coincide. Toyota also confirmed through replication testing that solder connections made before June 2012 and after November 2012 by the supplier could not have been made with any of the above conditions. In addition, Toyota confirmed that, if an open circuit develops in the switch, the brake control system could detect an inconsistency between the signals from the brake pedal load sensing switch (e.g. brake pedal application with a certain force) and the data from the master cylinder oil pressure sensor (e.g. no oil pressure), causing the system to initiate braking without brake pedal application by the driver.

May 16, 2014

Based on the above investigation, Toyota determined that the possibility of insufficient soldering in brake pedal load sensing switches manufactured between June and November 2012 could result in unexpected vehicle deceleration. Therefore Toyota decided to conduct a voluntary safety recall campaign on the subject vehicles.

As of May 15, 2014, Toyota is not aware of any accidents or injuries caused by this condition. Toyota has received 8 Toyota Field Technical Reports (FTRs), and 12 warranty claims from the U.S. market that relate to or may relate to this condition in the involved vehicles. (Multiple reports of the same incident are counted separately.)

7. Description of Corrective Repair Action:

All owners of the subject vehicles will be notified by first class mail. Lexus dealers will replace the brake pedal support assembly with a new one equipped with a properly soldered switch.

Reimbursement Plan for pre-notification remedies

As the owner notification letters will be mailed out well within the active period of the Lexus New Vehicle Limited Warranty, all involved vehicle owners for this recall would have been provided a repair at no cost.

8. <u>Recall Schedule</u>:

Toyota will mail an interim owner notification beginning in late June, 2014 to advise owners of this recall and the fact that they will receive a future notice when parts become available to complete repairs. A second mailing will be scheduled when replacement parts are available.

9. <u>Distributor/Dealer Notification Schedule</u>:

Interim distributor/dealer notifications will be sent in late June, 2014. Copies of all distributor/dealer notices will be provided as they are issued.