

October 15, 2014

## DEFECT INFORMATION REPORT

1. Vehicle Manufacturer Name:

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 Fuel Delivery Pipe

AISAN INDUSTRY CO., LTD.

1-1-1 Kyowa-cho, Obu-shi, Aichi 474-8588 Japan

Telephone: +81-562-48-6933

2. Identification of Involved Vehicles:

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

| Make/<br>Car Line | Model<br>Year  | Manufac-<br>turer | VIN   |  | Production<br>Period                             |
|-------------------|----------------|-------------------|-------|--|--|
|                   |                |                   | VDS   | VIS  |  |
| Lexus/<br>LS      | 2007 -<br>2010 | TMC               | ****F | 75000112 – A5100296                        | May 9, 2006<br>through<br>July 20, 2010          |
| Lexus/<br>GS      | 2006 -<br>2011 |                   | ****S | 60001017 – B0052002<br>65000028 – B5022980 | January 6, 2005<br>through<br>September 10, 2010 |

|              |                |  |       |   |  |
|--------------|----------------|--|-------|---|--|
| Lexus/<br>IS | 2006 -<br>2011 |  | ****2 | 62000003 – A2100116<br>A2500029 – A2513981<br>65000021 – B5025581 | August 30, 2005<br>through<br>September 10, 2010 |
|--------------|----------------|--|-------|---|--|

Note: (1) Although the involved vehicles are within the above VIN range, not all vehicles in this range were sold in the U.S.

(2) No other Toyota or Lexus vehicles use the same fuel delivery pipe as the subject vehicles.

(3) In addition, the above VIN range includes vehicles that received defective fuel delivery pipes under a previous recall campaign 09V-020.

3. Total Number of Vehicles Potentially Involved:

422,509 units

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

Unknown

5. Description of Problem:

The fuel delivery pipes in the engine compartment of the subject vehicles were manufactured with Nickel Phosphate plating to protect against corrosion. Some of the pipes could have been produced with plating particles on the gasket seating surface where the fuel pressure sensor is installed. In this condition, the sealing property of the gasket seated in between the pressure sensor and the pipe could become degraded. During vehicle operation, fuel could leak past the gasket. In the presence of an ignition source, this could increase the risk of a vehicle fire.

6. Chronology of Principal Events:

June 2010-April 2012

In June 2010, Toyota received a field technical report from the US market which indicated a fuel odor coming from the engine compartment of a customer's vehicle. The dealer verified fuel leakage between the fuel delivery pipe and the fuel pressure sensor; however the parts were not returned for investigation. Toyota sporadically received additional field technical reports from the Japan market indicating a fuel odor from the engine. The fuel pressure sensors and gaskets were recovered from some reported vehicles and investigated. No abnormality in any

of the recovered parts was found. Toyota reviewed the manufacturing process and production history of the fuel delivery pipe assembly and found no abnormalities. Toyota initiated parts recovery from in-use vehicles to identify the cause of the fuel leakage.

#### May 2012– January 2013

Toyota reviewed the field data and found that the failure occurred on fuel delivery pipes produced after a process change to add Nickel Phosphate plating to prevent dry corrosion, an issue that was the subject of previous recall campaign 09V-020. Toyota again investigated potential negative side effects of this plating on the joint between the fuel delivery pipe and fuel pressure sensor; however, no negative effect was found. By this time, Toyota was able to collect 14 fuel delivery pipe assemblies from in-use vehicles and found no abnormalities related to leak pressure of the pipe and residual tightening torque of the fuel pressure sensor. In addition, the amount of deformation of the gaskets was found to be within specification. Toyota also conducted a tightening evaluation employing scenarios in which the fuel pressure sensor might have been insufficiently tightened during manufacturing; however no abnormality was confirmed.

#### February 2013 – January 2014

Toyota conducted an FTA (Fault Tree Analysis) to narrow down possible causes. Using this analysis, Toyota began focusing its investigation on the effect of stress relaxation in the gasket between the fuel pressure sensor and fuel delivery pipe. The investigation focused on the customer's usage of the vehicle and involved collection and analysis of driving data recorded by actual vehicles, evaluation of heat and vibration effects when at high speeds (such as on a race track), and testing designed specifically for confirming stress relaxation; however, no correlation between customer usage and stress relaxation was identified.

#### February 2014 – Early October 2014

Toyota received additional reports of fuel odor and/or fuel leakage from the fuel pressure sensor. Toyota re-evaluated available field information and other data linked to fuel leakage on the subject vehicles. The data indicated that this phenomenon was occurring on vehicles produced after May 2008. Toyota investigated the supplier's production change history again and recovered parts from in-use vehicles, focusing its collection on vehicles produced after May 2008. During the review of the production history, Toyota confirmed that the specific orientation in which fuel delivery pipes were plated with the Nickel Phosphate coating was changed in April 2010 to enhance productivity. Investigation of recovered parts revealed that some fuel delivery pipe assemblies produced before April 2010 exhibited a lower leak pressure than others. Further microscopic examination of these parts revealed that there were several plating particles on the gasket seating surface where the fuel pressure sensor is installed, causing the sealing pressure to become degraded. Toyota and the supplier conducted replication testing employing the plating process conditions utilized before April 2010 and confirmed that many Nickel-Aluminum plating particles could adhere to the gasket seating

surface during the Nickel Phosphate plating process. In this condition, the sealing property of the gasket could become degraded and fuel could leak past the gasket during vehicle operation.

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After completing its investigation, Toyota decided to conduct a voluntary recall to repair the fuel delivery pipe in the subject vehicles, which includes vehicles previously repaired under recalls 09V-020.

As of October 8, 2014, Toyota is not aware of any fires or injuries caused by this condition. 1  
Toyota field report, 5 dealer field reports, and 238 warranty claims have been received that relate or may relate to this condition. Multiple counts 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 repair the gasket seating surface of the fuel delivery pipe where the fuel pressure sensor is installed, replace the gasket with a new one, and re-install the fuel pressure sensor with the proper tightening torque.

Reimbursement Plan for pre-notification remedies

The owner letter will instruct vehicle owners who have paid to have this condition remedied prior to this campaign to seek reimbursement pursuant to Lexus's General Reimbursement Plan.

8. Recall Schedule:

Interim owner notification will begin in early December, 2014.

A copy of the draft owner notification letter(s) will be submitted as soon as it is available.

9. Distributor/Dealer Notification Schedule:

Notifications to distributors/dealers were sent on October 14<sup>th</sup>, 2014. Copies of dealer communications will be submitted as they are issued.