

May 20, 2020

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 North America, Inc. ["TMNA"]
6565 Headquarters Drive, Plano, TX 75024

Manufacturer of Front Lower Suspension Arms material

NIPPON STEEL CORPORATION
2-6-1 Marunouchi, Chiyoda-ku, Tokyo 100-8071, Japan
Phone: +81-3-6867-4111

Country of Origin: Japan

2. Identification of Involved Vehicles and Affected Components:

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

Make/Car Line	Model Year	Manufacturer	Production Period
Toyota / RAV4	2019-2020	TMC	September 25, 2019 through October 29, 2019
Toyota / RAV4 HV	2019-2020	TMC	September 25, 2019 through October 25, 2019

Applicability	Part Number	Part Name	Component Description
MY2019-2020 Toyota RAV4 /RAV4 HV	48068-42070	ARM SUB-ASSY, SUSPENSION LWR RH W/BUSH	Front Lower Suspension Arm
	48069-42070	ARM SUB-ASSY, SUSPENSION LWR LH W/BUSH	

- Note: (1) Although the involved vehicles are within the above production period range, not all vehicles in this range were sold in the U.S.
- (2) This issue only affects the vehicles listed above that were assembled with front lower suspension arm(s) that were potentially manufactured from a specific slab of steel material by a specific supplier under certain production conditions. Other Toyota or Lexus vehicles sold in the U.S. are not equipped with front suspension lower arms that were potentially manufactured with the aforementioned material.

3. Total Number of Vehicles Potentially Involved:

Toyota RAV4 : 7,330
Toyota RAV4 HV : 2,172
Total : 9,502

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

Unknown. Toyota is unable to provide an estimate of the percentage of vehicles to actually contain the defect. Whether a crack exists in any particular front lower suspension arm will depend on production variation. In addition, whether a crack, that exists, will lead to a separation of the lower suspension arm while driving at higher speeds depends, in each case, on the depth of the crack on the front lower arm when manufactured and the driving patterns of the vehicle.

5. Description of Problem:

The subject vehicles are equipped with front lower suspension arms connecting the front wheels to the vehicle front cross member. Due to certain improper production conditions that occurred at the steel material supplier, a steel slab that was used to produce front lower suspension arms may have had cracks on some portions of its surface. If a vehicle with an affected front lower suspension arm(s) is driven frequently with rapid acceleration and deceleration over its lifetime, the cracks in the affected arms could propagate and the suspension arm can eventually separate from the front wheel assembly. This may result in a loss of vehicle control and increase the risk of a crash.

6. Chronology of Principal Events:

October 2019 – November 2019

In October 2019, Toyota identified cracks on the surface of 5 lower suspension arms at one of its manufacturing facilities. Toyota inspected approximately 4,680 lower suspension arms at two manufacturing facilities and found no additional arms with cracks. The 5 parts that had cracks were sent to the steel supplier for investigation and the supplier identified that the maximum depth of the cracks on these parts was approximately 230µm.

Toyota conducted a statistical analysis based on that data and estimated the largest crack that could have potentially been produced to be approximately 500µm. Toyota began conducting a large load induced test (to simulate striking a curb from the front and from the side) and a durability test (to simulate frequent driving with rapid acceleration and deceleration over a vehicle lifetime) with arms containing a 500µm crack that was artificially made. The results of the testing showed that the cracks did not propagate into a fracture.

Since an oxidized material layer was found within the cracks on these arms, Toyota began investigating the process at the steel supplier. Toyota suspected that the issue may have occurred during a process at the steel supplier because this oxidized material layer can only be generated when the material is exposed to air during high temperature conditions, which exists as part of the steel supplier's manufacturing process.

December 2019 to January 2020

Toyota conducted a review of the production records from the supplier and it was determined that a combination of various factors may have led to cracks developing on some portions of the surface of the steel slab that was used to make the aforementioned 5 arms where cracking was observed. First, this steel slab had a slight curve and had been in contact with a cold slab when stacked while the slabs were conveyed between processes. This may have caused certain portions of the slab to be rapidly cooled. After this slab was no longer in contact with a cold slab, it experienced higher levels of thermal recovery from internal heat in the steel material. This may have changed the internal micro structure of the slab resulting in a decrease of material strength. Then, during the next process, this slab experienced rapid heating due to the slab in front of it being shorter resulting in more exposure to the high temperatures in that process. Based on the supplier's production records, it was determined that there was only one slab that was made with all of the factors mentioned above. As a result, the supplier implemented a material handling policy that prohibited the contact of cold slabs with hot slabs during its material handling process.

During this timeframe, the supplier also inspected lower suspension arms that were sent to another Toyota plant. These arms had been potentially produced from material from the same steel slab and had arrived at the production plant during this timeframe. The

inspection identified two additional lower arms containing surface cracks. Those parts were sent to Japan for further investigation.

February 2020 to Early May 2020

Based on the supplier's further investigation of the two additional recovered arms with cracks, a maximum crack depth of approximately 580µm was observed on these parts. Using this updated data, Toyota revised its statistical analysis and estimated that the largest crack that could have potentially been produced to be approximately 1,000µm.

To further investigate the potential field implications, Toyota conducted the aforementioned large load induced test and durability test again with arms with an artificially made 1,000µm crack. While the large load test still showed that the crack did not propagate into a fracture, the crack did propagate into a fracture during the durability test. Toyota determined that if a vehicle with an affected front lower suspension arm(s) is driven frequently with rapid acceleration and deceleration over its lifetime, the cracks in the affected arms could propagate and the arm can eventually separate from the front wheel assembly. This may result in a loss of vehicle control and increase the risk of a crash.

May 14, 2020

Based on the results of the above investigation, Toyota decided to conduct a voluntary safety recall campaign for the vehicles identified above.

As of May 14, 2020, based on a diligent review of records, Toyota's best engineering judgement is that there are no Toyota Field Technical Reports and warranty claims that have been received from U.S. sources that relate or may relate to this condition and which were considered in the decision to submit this report.

7. Description of Corrective Repair Action:

All known owners of the subject vehicles will be notified by first class mail to return their vehicles to a Toyota dealer. For all involved vehicles, Toyota dealers will replace both front lower suspension arms with new ones free of charge.

Reimbursement Plan for pre-notification remedies

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

8. Recall Schedule:

Notifications to owners of the affected vehicles will occur by July 19, 2020. A copy of the draft owner notification will be submitted as soon as it is available.

9. Distributor/Dealer Notification Schedule:

Notifications to distributors/dealers will be sent by May 20, 2020. Copies of dealer communications will be submitted as they are issued.

10. Manufacturer's Campaign Number:

[Interim / Remedy] 20TB08 / 20TA08