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By Recall Management Division at 8:24 am, Jun 12, 2014

June 11, 2014

Ms. Nancy Lewis
Associate Administrator for Enforcement
National Highway Traffic Safety Administration
Recall Management Division (NVS-215)
1200 New Jersey Avenue, SE – Room W45-306
Washington, DC 20590

Dear Ms. Lewis:

The following information is submitted pursuant to the requirements of 49 CFR 573.6 as it applies to a determination by General Motors to conduct a safety related recall involving certain 2012 model year Chevrolet Sonic vehicles.

573.6(c)(1): Chevrolet Brand of General Motors Company.

573.6(c)(2)(3)(4): This information is shown on the attached sheet.

573.6(c)(5): General Motors has decided that a defect which relates to motor vehicle safety exists in certain 2012 model year Chevrolet Sonic vehicles equipped with a 6 Speed Automatic Transmission and 1.8L Four Cylinder Engine. These vehicles may have a condition in which the transmission turbine shaft may fracture. If this occurs while in first or second gear, there will be no effect on performance but no upshift to third through sixth gears will occur. If the fracture occurs while in third through sixth gears, the vehicle will coast until it slows enough for a downshift to first or second gear to occur, increasing the risk of a crash. In both instances, a MIL (Malfunction Indicator Lamp) may illuminate and all of the forward gears may become inoperative if operated in this manner for a long period of time (minutes or hours). The engine will continue to run and all power accessories will remain functional.

573.6(c)(6): In early November 2013, two broken turbine shafts were found in transmissions returned to the Warranty Parts Center (WPC). On November 6, 2013, the shafts were examined and then delivered to the supplier, Sundram Fasteners, Ltd (SFL), for analysis. No non-conformities were identified by Sundram at that time.

On January 14, 2014, the final reports from Sundram were submitted to GM concluding it was due to torsional overload failure. (Subsequent investigation by GM identified a quality issue.)

By late January 2014, several more transmissions (5 to 6) were returned to the WPC for the same concern. The GM Quality Reliability Durability (QRD) lead for Gears and Shafts and Validation Engineer for Global Front Wheel 6 Speed Transmission initiated a warranty



search to assess the total number of related claims. The data showed a clear increase in incidents for 2012 Sonics built with 6T30 turbine shaft during late February to June of 2012.

On February 10, 2014, a request was sent to the Warranty Parts Center to forward 6T30 turbine shafts from all field returns to Engineering for analysis.

On February 11, 2014, SFL reported their production process should produce a radius of 1 to 2mm per the general note on the print. Finite element structural analysis was conducted by GM with the smallest radius allowed by the print - 1mm - which would produce the highest stresses. The analysis demonstrated that the stress with the worst case radius allowed by design was not predicted to be high enough to cause spline failures. Therefore there must be some production non-conformance in the supplier process (smaller radii, precracks or laps and folds in the metal) that would explain the broken shafts in the suspect build period.

On March 19, 2014, GM engineers obtained additional shafts from a remanufacturing logistics center, to compare shafts built inside and outside the suspect window. Samples in suspect window were found to have a sharp corner and not a smooth radius in the spline.

On March 21, 2014, GM engineers met to discuss possible quality issues in the suspect production window. Cyclic fatigue testing, begun mid-April, shows different life expectancies between shafts with sharp corners to shafts with smooth radii.

The issue was presented to Field Performance Evaluation Review Committee (FPERC) on June 2, 2014, and on June 4, 2014, the Safety Field Action Decision Authority (SFADA) decided to conduct a safety recall.

573.6(c)(8): Dealers are to replace the transmission turbine shaft.

General Motors will provide the dealer bulletin and owner letter mail dates when available.

Pursuant to 577.11, General Motors does not plan to provide notice about reimbursement to owners because all involved vehicles are covered under the new vehicle warranty.

573.6(c)(10): General Motors will provide the dealer bulletin and owner letter under separate cover.

573.6(c)(11): General Motors' assigned recall number is 14234.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Latouf", written in a cursive style.

Brian Latouf, Director
Field Product Investigations & Evaluations

Attachment

573.6(c)(2)(3)(4)

VEHICLES POTENTIALLY AFFECTED BY MAKE, MODEL, AND MODEL YEAR
PLUS INCLUSIVE DATES OF MANUFACTURE

<u>MAKE</u>	<u>MODEL SERIES</u>	<u>MODEL YEAR</u>	<u>NUMBER INVOLVED</u>	<u>INCLUSIVE MANUFACTURING DATES (FROM) (TO)</u>		<u>DESCRIPTIVE INFO. TO PROPERLY IDENT. VEH.</u>	<u>EST. NO. W/CONDITION</u>
Chevrolet	J	2012	21,567	03/01/2012	06/29/2012	Sonic	*
	GM Total:		21,567				

* All involved vehicles will be corrected as necessary.

573.6(c)(2)(iv): Sundram Fasteners Ltd.
Metal Forms Division
Harita, Hosur
India 635109
Mobile: 248-703-1679

The parts are manufactured in India.