



GENERAL MOTORS LLC
Global Vehicle Safety

February 18, 2021

Tanya Topka, Chief
Vehicle Defects Division – A
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Ave., SE
Washington, DC 20590

VIA EMAIL

G232301

NEF-101

PE20-019

Re: General Motors LLC's Responses to NHTSA's December 31, 2020 Information Request in Investigation PE20-019

Dear Ms. Topka:

This letter contains General Motors LLC's ("GM") responses (the "**Responses**") to the information requests in your December 31, 2020 letter (the "**Requests**") relating to National Highway Traffic Safety Administration ("NHTSA") Preliminary Evaluation 20-019, which is a NHTSA investigation of "allegations of rear toe link adjuster separating in certain model year (MY) 2010-2015 Cadillac SRX vehicles," (the "**Alleged Defect**"). In addition to MY2010-2015 Cadillac SRX, NHTSA has also requested data for the 2016 Cadillac SRX (collectively, the "**Subject Vehicles**"). NHTSA also requested data for the 2011-2012 Saab 9-4x, which shares a design with the SRX but were distributed by a third party which purchased the Saab business in February 2010 (the "**Peer Vehicles**")¹. Except as otherwise provided, this response covers both the Subject Vehicles and Peer Vehicles to the extent the relevant information is available to GM.²

Unless otherwise defined herein, GM's Responses rely on the defined terms in the Requests. GM will provide supplemental data in response to Request 8 that will include documents relating to a recent investigation that concluded on February 4, 2021. This investigation is identified in response to Question 8 and has been labeled below as "Action 8F."

BACKGROUND

A. Design of the Subject Components

The rear toe link adjusters in the Subject Vehicles and Peer Vehicles (the "**Subject Components**") are comprised of a sleeve nut and two jam nuts, an adjustable design. Like all GM suspension component systems, the design of the Subject Components was subjected to extensive development and validation testing that included a range of simulated and actual abuse conditions,

¹ It was agreed with NHTSA at a meeting on January 6, 2021 that the 2011-2012 Saab 9-4x vehicles would be considered as peer vehicles instead of subject vehicles as listed in the IR Letter.

² All the affected 9-4x vehicles (539 in total) were sold or distributed starting in late 2011, around the time that the purchaser (and the Saab business) entered insolvency proceedings. Due to the insolvency, the warranty obligations for those vehicles were extinguished. Further, any warranty service that was performed on those vehicles would have been through the purchaser's Saab service centers. Accordingly, GM has limited data for these vehicles.



including corrosion testing. And like all GM suspension component systems, this system must be correctly installed and serviced to function safely. When correctly installed and torqued to specifications in accordance with GM's published and publicly available service procedures, this design performs appropriately and safely in the field and as it did in GM internal testing.

B. GM's 2014 Recall of the Subject Components

On September 10, 2014, GM recalled the Subject Vehicles and Peer Vehicles after determining that, on some of those vehicles, the jam nuts in the Subject Component may not have been torqued to the proper specification during GM's assembly process. Ref. NHTSA Recall No. 14V257. As part of the recall remedy, GM dealers were instructed to inspect the Subject Components and increase the torque if necessary, or to replace the Subject Components if they were loose or damaged. The design was proven effective when correctly installed and torqued in accordance with the published procedures.

C. GM has continued to Monitor the Subject Components and Make Improvements to its Service Procedures

After the 2014 recall was launched GM received isolated reports of loose toe links in vehicles that had been repaired under the recall. GM undertook an analysis of dealer repairs and determined that some dealers had failed to follow GM's service procedures. On March 30, 2015, GM revised the service procedures to help prevent further dealer errors in making the repair under Bulletin 14457C³.

In addition to updating the service procedure, GM undertook several additional investigations, identified in Response 8, below, to monitor field performance and evaluate whether the improved service procedure effectively reduced errors in servicing. These subsequent investigations each determined that the overall rate of field reports remained low and an improper repair was very unlikely if performed after the revised service procedures were published. Together, this data indicated that the original repair was successful in most cases, and the revised service procedure was being followed and was effective.

In an investigation opened March 28, 2019, N19-222049, GM also analyzed whether rear service alignments performed by third-party service providers may be contributing to reoccurrences of the Alleged Defect in recalled vehicles or initial occurrences outside of the recall population. GM determined that if the alignment is properly performed, including by following GM's published and publicly available service instructions, there is an extremely low risk of occurrence. Nevertheless, in October 2020, out of an abundance of caution, GM further updated the service information to instruct technicians to replace the Subject Components rather than adjusting them after an alignment, which should prevent any further instances of improper service repairs under those circumstances.

³ The following note was added to the bulletin: "Ensure the open end wrench is on the adjustment collar (2) while the jam nut (1) is checked with the torque wrench."

D. The Subject Components are Safe and Not Defective

GM's most recent investigation into the Alleged Defect was reviewed by its Safety & Field Action Decision Authority ("SFADA") on February 4, 2021, N20-232000. The results were consistent with past investigations.

The Subject Components fail at a very low rate in the field. Taken collectively, GM's investigations and iterative improvements to its service procedures have reduced the risk of an improper service event--and, by extension, the risk of a field failure--to effectively zero.

PRELIMINARY STATEMENT

GM prepared its Responses by: (i) identifying, in consultation with the appropriate GM business personnel, the primary electronic databases and document repositories in GM's custody and control that store potentially responsive documents and information in the ordinary course of business, as more fully identified in the Responses below; and (ii) conducting a reasonable search, as appropriate, of these databases and document repositories for responsive documents and information. GM objects to the definitions of "document" and "GM" in the Requests as overbroad, unreasonably burdensome, and not reasonably tailored to records that might be expected to bear relevant and responsive information. GM's document production does not contain: (i) attorney-client privileged information or information protected as attorney-work product; and (ii) documents generated or archived in these locations after the dates that GM conducted its final searches. GM construes the Information Request as pertaining to vehicles manufactured for sale in the United States and its territories.

GM's document production is contained in the folder titled G232301_1_GM. Certain portions of these documents are exempt from public disclosure under the Freedom of Information Act (5 U.S.C. § 552(b)(4)) ("FOIA") and 49 CFR part 512, and have been redacted in the copy contained in the folder. GM has submitted the unredacted nonpublic copy of its document production (in the folder titled G232301_2_GM_CONF) to the NHTSA Office of Chief Counsel under 49 C.F.R. part 512.

Some of the documents in GM's production contain personally identifiable information ("PII") (e.g., vehicle registration information or VIN, employee names, and customer/employee contact information). GM today submits documents with unredacted PII with the understanding that NHTSA (or GM, if NHTSA prefers) will redact any PII before disclosing these documents to the public.

As noted above, the Subject Components are each comprised of a sleeve nut and two jam nuts. For purposes of completeness, when used in relation to the Alleged Defect, the term "separate" (or variations thereof) in this Response is broadly defined to include partial separations of the Subject Components (i.e., gaps between the and sleeve nut and jam nut).

REQUESTS AND RESPONSES

REQUEST 1:

State, by model and model year, the number of subject vehicles GM has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by GM, state the following:

- a. Vehicle identification number (VIN);
- b. Make;
- c. Model;
- d. Model Year;
- e. Subject component part number(s) and design version(s) installed as original equipment;
- f. Date of manufacture;
- g. Date warranty coverage commenced; and
- h. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease). Date on which the remedy for Recall 14V571 was applied
- i. Labor Code corresponding to the Recall 14V571 remedy applied

Provide the table in Microsoft Access 2010, or a compatible format, entitled “PRODUCTION DATA.”

GM RESPONSE:

In response to your request that GM “[s]tate, by model and model year, the number of subject vehicles GM has manufactured for sale or lease in the United States,” GM provides the following table:

MAKE	MODEL	MODEL YEAR							TOTAL
		2010	2011	2012	2013	2014	2015	2016	
Cadillac	SRX	48,822	59,149	67,732	50,573	51,884	58,686	44,617	381,463
SAAB	9-4X		539						539
	Total	48,822	59,688	67,732	50,573	51,884	58,686	44,617	382,002

TABLE 1-1: SUBJECT AND PEER VEHICLES

GM has produced the information requested in subparts (a) through (i) on the G232301_1_GM folder in the subfolder labeled "Q_01". Refer to the Microsoft Access 2010 file labeled "Q_01_PRODUCTION DATA."

The date and labor code corresponding to Recall 14V571 are not provided for MY2016 and certain MY2015 Subject Vehicles, built after September 1, 2014, since they were not included in Recall 14V571. The labor code corresponding to the Peer Vehicles, Saab Recall 15035, is not available. However, out of the 376 Peer Vehicles remedied under that recall there were only two part replacements and the remainder were "inspect and tighten" only.

REQUEST 2:

State the number of each of the following, received by GM, or of which GM is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:

- a. Consumer complaints, including those from fleet operators;
- b. Field reports, including dealer field reports;
- c. Reports involving a crash, injury or fatality;
- d. Property damage claims;
- e. Third-party arbitration proceedings where mfg's short name is or was a party to the arbitration; and
- f. Lawsuits, both pending and closed, in which GM is or was a defendant or codefendant.

For subparts "a" through "f" state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in which a crash occurred are to be counted as a crash report, a field report and a consumer complaint).

In addition, for items "c" through "f" provide a summary description of the alleged problem and causal and contributing factors and GM's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e" and "f" identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

GM RESPONSE:

In response to subparts (a) through (f) for the Subject Vehicles, GM provides the following table, which GM prepared by conducting a reasonable keyword search for potentially responsive

claims in several databases.⁴

TYPE OF REPORT	GM REPORTS	SUBCATEGORIES			
		CORRESPONDING TO NHTSA REPORTS ⁵	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/ FATALITIES
<i>Owner Reports</i>	59	9	5	9	4/0
<i>Field Reports</i>	3	0	0	0	0/0
<i>Not-In-Suit Claims</i>	3	1	3	3	3/0
<i>Third Party Arbitration Proceedings</i>	0	0	0	0	0/0
<i>Product Liability Lawsuits</i>	0	0	0	0	0/0
<i>Total Reports (Including Duplicates)</i>	65	10	8	12	7/0
<i>Total Vehicles with Reports (Unique VIN)</i>	63	9	6	10	5/0

TABLE 2-1: SUMMARY OF CLAIMS RESPONSIVE TO REQUEST 2 FOR THE SUBJECT VEHICLES

As summarized in Table 2-1, GM is aware of 63 unique claims⁶ involving the Subject Vehicles that may be responsive to Request 2. In determining the responsiveness of a claim, GM erred on the side of coding the claim as responsive, even if the evidence in GM’s possession linking the claim to the Alleged Defect was implausible, inconclusive, or circumstantial. Accordingly, the claim totals in Table 2-1 are conservative. With respect to subparts “e” and “f,” GM is not aware of any third-party arbitration proceedings or lawsuits related to the Alleged Defect in the Subject Vehicles.

A summary of each alleged crash/injury listed in Table 2-1 is set forth in Appendix A, in the G232301_2_GM_CONF folder in the “Q02” subfolder. Additional information about the claims is available in the document production that GM is providing in response to Request 4, and GM’s assessment of the Alleged Defect is provided in its Response to Request 12. GM characterizes these accident claims as inconclusive. In each case, GM could not conclusively tie the accident (or the injury) to the Subject Component or the Alleged Defect, and many of these claims appear to be wholly without merit. Further, GM found the Subject Component may have separated in only three of the claims.

GM is not aware of any claims on the Peer Vehicles and does not have access to Saab complaint data, as noted above.

⁴ These databases include: Customer Assistance Center (CAC), Product Assistance Center (PAC), Business Resource Center (BRC), Technical Assistance Center (TAC), Field Information Network Database (FIND), Company Vehicle Evaluation Program (CVEP), Captured Testing Fleet (CTF), COMPASS, Early Quality Feedback (EQF), Problem Resolution Tracking System (PRTS), Field Product Report Database (FPRD), Global Incident Management System (GIMS), and GM Legal records.

⁵ See VOQ Analysis below.

⁶ NHTSA and GM agreed at a meeting on January 6, 2021 that only complaints that occurred after the recall repair was performed were responsive for vehicles part of Recall 14V571.

VOQ Analysis

There were 16 VOQs listed in the Request, none of which can be conclusively linked to the Alleged Defect:

- There was no GM corresponding data for 4 of the VOQ claims.⁷
- GM identified a corresponding record for 12 out the 16 VOQs.
 - Five of these claims⁸ were inconclusive as to whether the Subject Component was involved as there were no GM related repairs relating to the Subject Component.
 - Four of the claims⁹ were confirmed to have the Subject Component replaced post incident but were not determined to be the cause of the incident.
 - Three of the claims were found not to be associated with the Alleged Defect. The records for these VOQs are located in the G232301_1_GM folder in the “Q_03” subfolder.
 - VOQ 11383574 still has Recall 14V571 open.
 - VOQ 11312102 was a complaint regarding noise and it was found to be related to the hub bearings. The incident date listed, August 19, 2014, was also prior to the recall release date.
 - VOQ 11374371 had a vehicle inspection and the toe links were found to be intact and not separated. See files for Case 950471.

REQUEST 3:

Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:

- a. GM’s file number or other identifier used;
- b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
- c. Vehicle owner or fleet name (and fleet contact person), street address, email address and telephone number;
- d. Vehicle’s VIN;
- e. Vehicle’s make, model and model year;
- f. Vehicle’s mileage at time of incident;
- g. Incident date;
- h. Report or claim date;

⁷ VOQs 11278653, 11374309, 11342134, 11132827

⁸ VOQs 11363094, 11353745, 11131926, 11210601, 11363425

⁹ VOQs 11342542, 11153296, 11268463, 11209435

- i. Excluding Recall 14V571 service: Date and vehicle mileage at the most recent identifiable service to any of the subject components
- j. Excluding Recall 14V571 service: Description of the most recent identifiable service to any of the subject components
- k. Excluding Recall 14V571 service: Name of the service provider conducting the most recent identifiable service to any of the subject components
- l. Whether a crash is alleged;
- m. Whether property damage is alleged;
- n. Number of alleged injuries, if any; and
- o. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "REQUEST NUMBER TWO DATA."

GM RESPONSE:

GM has produced the requested information for the Subject Vehicles in the G232301_1_GM folder in the subfolder labeled "Q_03". Refer to the Microsoft Access 2010 file labeled "Q_03_REQUEST NUMBER TWO DATA."

It is difficult to determine in each case whether a rear toe service alignment has been performed on a particular vehicle. While GM dealers can perform an alignment, these would only be covered under warranty for the first year or 12,000 miles. Alignments can also be performed by a third-party repair shop, in which case GM does not have access to the records. Further, even if an alignment was performed, the rear toe adjustment can also be performed by adjusting the rear camber, which would not affect the Subject Component. However, GM has analyzed the data on 31 vehicles¹⁰ to review whether a rear toe service alignment was performed. This data shows that these vehicles had a rear service alignment performed an average of 19 months and 23,000 miles prior to an incident potentially relating to the Subject Component.

For subparts (i), (j) and (k), instead of pulling the most recent identifiable service, which may be unrelated to a rear service alignment, GM searched labor codes that may involve a rear service alignment for the 63 unique VINs. However, this only resulted in two records. GM also pulled the dealer repair order data for the 63 unique VINs and sorted the file by the Tires, Wheels and Suspension System categories. This data¹¹ is not included in the database listed above, but in separate excel files in the G232301_1_GM folder in the subfolder labeled "Q_03". However, if

¹⁰ Including the 13 VOQs that could not be conclusively ruled out.

¹¹ The repair order date would need to be referenced against the alleged incident date to determine which occurred first.

the most recent service was performed outside of the warranty period or at a third-party repair shop, GM would not have a record of it.

REQUEST 4

Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method GM used for organizing the documents. Describe in detail the search methods and search criteria used by GM to identify the items in response to Request No. 2.

GM RESPONSE:

With respect to Request 4, GM CAC, PAC, TAC and Legal records are GM's primary repositories of potentially responsive documents in the ordinary course of business. GM identified responsive documents by conducting a keyword search of these records for potentially responsive claims and reviewed the associated claim file to confirm the responsiveness of the claim. GM is producing the responsive, nonprivileged documents associated with responsive claims listed in Table 2-1 in the Microsoft Access file labeled "Q_03_REQUEST NUMBER TWO DATA" in the subfolder labeled "Q_03" in the G232301_1_GM folder. GM has organized the records by the GM file number.

Additionally, this response was compiled and prepared upon review of documents produced by various GM locations. This response does not include documents generated or received at those GM locations after their searches.

REQUEST 5

State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by GM to date that relate to, or may relate to, the alleged defect in the subject vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; and warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign.

Separately, for each such claim, state the following information:

- a. GM's claim number;
- b. Vehicle owner or fleet name (and fleet contact person), street address, email address and telephone number;
- c. VIN;
- d. Repair date;
- e. Vehicle mileage at time of repair;

- f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- g. Labor operation number(s);
- h. Problem codes;
- i. Diagnostic trouble codes;
- j. Replacement part number(s) and description(s);
- k. Concern stated by customer;
- l. Cause as stated on the repair order;
- m. Correction as stated on the repair order; and
- n. Additional comments, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "WARRANTY DATA."

GM RESPONSE

To collect warranty data responsive to this request, GM conducted a reasonable keyword search of the GM Global Analysis and Reporting Tool ("GART"), GM's primary repository of potentially responsive warranty claim information in the ordinary course of business.

Table 5-1, below, summarizes the warranty claims for the Subject Vehicles that may relate to the Alleged Defect.¹² A total of 308 warranty claims¹³ (296 unique VINs) were categorized as potentially responsive.¹⁴ This total includes 16 claims that were also reported as a field report in Response 2. This represents an extremely low rate of 0.82 Incidents Per Thousand Vehicles (IPTV) at 77 Months in Service (MIS). GM is not aware of any warranty claims on the Peer Vehicles.

¹² GART does not contain the vehicle owner's name or telephone number. Additionally, some replacement part numbers, part descriptions and customer concern code descriptions are not included in the GM warranty database. In response to subpart (i), the diagnostic trouble code (DTC) is not captured separately and, if available, is included in one of the verbatim fields.

¹³ NHTSA and GM agreed at a meeting on January 6, 2021 that only claims that occurred after the recall repair was performed were responsive for vehicles part of Recall 14V571.

¹⁴ GM identified responsive records based on the information supplied to GM by the servicing dealerships, which can contain material errors and omissions. Warranty records, for example, do not always accurately or completely describe the condition of the allegedly defective part at the time of the warranty correction, and service personnel may not consistently classify warranty repairs using the correct labor and trouble codes.

MAKE	MODEL	MODEL YEAR						2016	TOTAL
		2010	2011	2012	2013	2014	2015		
Cadillac	SRX	34	25	36	28	85	72	28	308
	Total	34	25	36	28	85	72	28	308

TABLE 5-1: SUMMARY OF SUBJECT VEHICLE WARRANTY CLAIMS

GM has produced the requested information in subparts (a) through (n) in the G232301_1_GM folder in the subfolder labeled “Q_05”. Refer to the Microsoft Access 2010 file labeled “Q_05_WARRANTY DATA.” In response to subparts (l) and (m), GM has included in these records all available dealer-provided “verbatim text” in the GART database relating to the responsive claims that are currently in GM's possession¹⁵.

REQUEST 6

Describe in detail the search methods and search criteria used by GM to identify the claims in response to Request No. 5, including the labor operations, problem codes, diagnostic trouble codes, part numbers and any other pertinent parameters used.

Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions, diagnostic trouble codes and diagnostic trouble code descriptions applicable to the alleged defect in the subject vehicles. State whether the diagnostic trouble codes are automatically reported to the warranty database electronically or manually entered into the warranty database by a claims administrator.

State, by make and model year, the terms of the new vehicle warranty coverage offered by GM on the subject vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered). Describe any extended warranty coverage option(s) that GM offered for the subject vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.

GM RESPONSE:

To populate Table 5-1, GM searched the GART warranty database for the labor codes that GM identified as potentially related to the Alleged Defect in the Subject Vehicles. These labor codes are summarized in Table 6-1. Each warranty record may have up to five verbatim fields. All verbatim claim fields were read, and a claim was determined to be responsive if the verbatim indicated that the claim may have been related to the Alleged Defect in the Subject Component.

LABOR CODE	LABOR CODE DESCRIPTION
8040200	Rear Suspension Link Replacement - Upper to Lower Control Arm
8040240	Adjust Link Replacement
8040530	Stabilizer Shaft Link Replacement
8070032	Wheel Alignment Measurement

¹⁵ The verbatim text is provided to GM by the dealer that serviced the warranty claim and reflects both dealer- and customer-provided comments relating to the claim.

8044300	Rear Axle Lower Control Arm Replacement
9100934 ¹⁶	N140457 - Inspect and Install One Toe Rear Susp Adj Link
9100935 ¹⁶	N140457 - Inspect and Install Both Toe Rear Susp Adj Link

TABLE 6-1: LABOR CODES USED IN GART WARRANTY SEARCH

Table 6-2 summarizes the diagnostic trouble codes that may be related to the Alleged Defect in the Subject Vehicles. The diagnostic trouble codes are manually entered into the warranty database in one of the five verbatim fields and may be subject to technician input error or omission.

DTC CODE	DTC CODE DESCRIPTION¹⁷
C0710	Steering Position Signal (Steering Wheel Angle Sensor) (The traction/stability control indicator will turn on with this DTC.)

TABLE 6-2: DTC CODES

Table 6-3 summarizes the terms of new vehicle warranty coverage offered by GM on the Subject Vehicles:

MODEL YEAR	MAKE	WARRANTY TYPE	WARRANTY TERMS
2010-2016	Cadillac	Limited Bumper-To-Bumper	4 years / 50,000 miles
2011-2012	Saab	Limited Bumper-To-Bumper	4 years / 50,000 miles ¹⁸

TABLE 6-3: NEW VEHICLE WARRANTY COVERAGE OFFERED BY GM ON SUBJECT VEHICLES

Many different optional extended warranty plans were available for the Subject Vehicles through GM dealerships. These plans were offered at different prices and for varying lengths of time, based on a customer's preference.

REQUEST 7

Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that GM has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities. This includes, but is not limited to, bulletins, advisories, informational documents, training documents, or other documents or communications, with the exception of standard shop manuals. Also include the latest draft copy of any communication that GM is planning to issue within the next 120 days.

GM RESPONSE:

The documents that are responsive to Request 7 are in the G232301_1_GM folder in the subfolder labeled "Q_07".

¹⁶ These labor codes are associated with Recall 14V517. They were searched for vehicles that had the recall performed a second time where one or both links were replaced.

¹⁷ The DTC description may vary based on the symptom code associated with the fault.

¹⁸ These are the standard warranty terms for Saab vehicles, however, as noted above they may have been sold with no warranty due to the insolvency.

REQUEST 8

Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, “actions”) that relate to, or may relate to, the alleged defect in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, GM. For each such action, provide the following information:

- a. Action title or identifier;
- b. The actual or planned start date;
- c. The actual or expected end date;
- d. Brief summary of the subject and objective of the action;
- e. Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and
- f. A brief summary of the findings and/or conclusions resulting from the action.

For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action.

GM RESPONSE:

GM identified responsive product investigations by conducting a reasonable search in GM’s Global Vehicle Safety-Case Observation Review and Evaluation (“**GVS-CORE**”) database, which is the primary electronic records database for GM’s Safety and Field Investigations organization. GM is aware of the following product investigations conducted by GM or at GM’s direction that relate to the Alleged Defect:

<u>Action 8-A: GM Internal Investigation N14-164213 (GFPE N-140457)</u>	
Start/End Dates	July 14, 2014 – September 10, 2014
Involved Engineering Groups	GM Global Safety and Field Investigations, GM Global Engineering
Description	GM investigated claims of the Alleged Defect due to an alleged malfunction of the Subject Component in the Subject and Peer Vehicles.
Outcome	On September 10, 2014, upon review of the collected data, GM’s SFADA decided on a Safety Recall.

Associated Documents	Information and documents contained in GVS-CORE related to investigation N14-164213. The files are in the G232301_1_GM and G232301_2_GM_CONF folders labeled as 8A-164213 in the index file.
<u>Action 8-B: GM Internal Investigation N15-201858</u>	
Start/End Dates	November 3, 2015 – April 11, 2016
Involved Engineering Groups	GM Global Safety and Field Investigations, GM Global Engineering
Description	GM investigated claims of the Alleged Defect due to an alleged malfunction of the Subject Component in the Subject Vehicles and Peer Vehicles after Recall 14V517 was performed.
Outcome	On April 11, 2016, upon review of the collected data, GM's Open Investigation Review (OIR) Board decided to close the investigation with no field action. GM undertook an analysis of dealer repairs and determined that some dealers had failed to follow GM's service procedures. On March 30, 2015, GM revised the service procedures to help prevent further dealer errors in making the repair under Bulletin 14457C.
Associated Documents	Information and documents contained in GVS-CORE related to investigation N15-201858. The files are in the G232301_1_GM and G232301_2_GM_CONF folders labeled as 8B-201858 in the index file.
<u>Action 8-C: GM Internal Investigation N19-222049</u>	
Start/End Dates	March 28, 2019 – May 16, 2019
Involved Engineering Groups	GM Global Safety and Field Investigations, GM Global Engineering
Description	GM investigated claims of the Alleged Defect due to an alleged malfunction of the Subject Component in the Subject Vehicles and Peer Vehicles after Recall 14V517 was performed and claims in the non-Recall population.
Outcome	On May 16, 2019, upon review of the collected data, GM's SFADA decided to close the investigation with no field action.
Associated Documents	Information and documents contained in GVS-CORE related to investigation N19-222049. The files are in the G232301_1_GM and G232301_2_GM_CONF folders labeled as 8C-222049 in the index file.
<u>Action 8-D: GM Internal Investigation N19-226310</u>	

Start/End Dates	July 23, 2019 – September 5, 2019
Involved Engineering Groups	GM Global Safety and Field Investigations, GM Global Engineering
Description	GM investigated claims of the Alleged Defect due to an alleged malfunction of the Subject Component in the Subject Vehicles and Peer Vehicles after Recall 14V517 was performed and claims in the non-Recall population.
Outcome	On September 5, 2019, upon review of the collected data, GM's SFADA decided to close the investigation with no field action.
Associated Documents	Information and documents contained in GVS-CORE related to investigation N19-226310. The files are in the G232301_1_GM and G232301_2_GM_CONF folders labeled as 8D-226310 in the index file.
<u>Action 8-E: GM Internal Investigation N20-231357</u>	
Start/End Dates	August 5, 2020 – October 1, 2020
Involved Engineering Groups	GM Global Safety and Field Investigations, GM Global Engineering
Description	GM investigated claims of the Alleged Defect due to an alleged malfunction of the Subject Component in the Subject Vehicles and Peer Vehicles after Recall 14V517 was performed and claims in the non-Recall population.
Outcome	On October 1, 2020, upon review of the collected data, GM's SFADA decided to close the investigation with no field action.
Associated Documents	Information and documents contained in GVS-CORE related to investigation N20-231357. The files are in the G232301_1_GM and G232301_2_GM_CONF folders labeled as 8E-231357 in the index file.
<u>Action 8-F: GM Internal Investigation N20-232000</u>	
Start/End Dates	October 9, 2020 – February 4, 2021
Involved Engineering Groups	GM Global Safety and Field Investigations, GM Global Engineering
Description	GM investigated claims of the Alleged Defect due to an alleged malfunction of the Subject Component in the Subject Vehicles and Peer Vehicles after a rear service alignment. GM also conducted a field study of employee vehicles as part of this investigation.
Outcome	On February 4, 2021, upon review of the collected data, GM's SFADA decided to close the investigation with no field action. GM's field study included 58 links from employee vehicles in the field that were reported to have had a recent rear service alignment. Only one vehicle

	from this study was found to have a toe link with any gap between the jam nut and the sleeve nut. The other 57 parts were found to have good joint integrity even when corrosion was present, with and without internal thread corrosion, and measured adequate thread engagement between the jam nuts and the sleeve nuts, meeting the design specification.
Associated Documents	Information and documents contained in GVS-CORE related to investigation N20-232000. Please find the material lab report in the G232301_2_GM_CONF folder in the 8F-232000 subfolder. The other files related to this investigation will be provided in GM's supplemental data submission by March 5, 2021.
<u>Action 8-G: PRTS Records</u>	
Start/End Dates	August 2009 – December 2015
Involved Engineering Groups	GM Global Engineering
Description	Problem Resolution Tracking System (PRTS) records associated with the Alleged Defect due to joint or turnbuckle separation in the Subject Vehicles.
Outcome	The conclusions are consistent with GM's Response to Request 12 as it relates to causal or contributory factors, failure mechanisms, and failure modes.
Associated Documents	Information and documents contained in the PRTS system related to this action are in the G232301_2_GM_CONF folder in the PRTS subfolder.
<u>Action 8-H: Benteler Engineering Information</u>	
Start/End Dates	September 2014
Involved Engineering Groups	Benteler (the supplier of the rear suspension module which contains the Subject Component for the Subject and Peer Vehicles)
Description	Benteler provided their manufacturing process documentation for the rear suspension module.
Outcome	Benteler did not make any conclusions related to the Alleged Defect.
Associated Documents	Benteler documents that GM has in its possession, custody, or control presented during GM meetings and reviews. The files are in the G232301_2_GM_CONF folder labeled as Supplier CBI in the index file.

TABLE 8-1: GM INVESTIGATIONS OF THE ALLEGED DEFECT IN THE SUBJECT AND PEER VEHICLES

GM is producing the nonprivileged documents that are responsive to Request 8 in the G232301_1_GM and G232301_2_GM_CONF folders in the subfolders labeled "Q_08". The

index file “PE20-019 Q8 Index_NHTSA” provided is a directory of the files with the original file names and is labeled as listed in Table 8-1.

REQUEST 9

Describe all modifications or changes made by, or on behalf of, GM in the design, material composition, manufacture, quality control, supply, or installation of the subject component, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. For each such modification or change, provide the following information:

- a. The date or approximate date on which the modification or change was incorporated into vehicle production;
- b. A detailed description of the modification or change;
- c. The reason(s) for the modification or change;
- d. The part number(s) (service and engineering) of the original component;
- e. The part number(s) (service and engineering) of the modified component;
- f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
- g. When the modified component was made available as a service component; and
- h. Whether the modified component can be interchanged with earlier production components.

Also, provide the above information for any modification or change that GM is aware of which may be incorporated into vehicle production within the next 120 days.

GM RESPONSE:

A spreadsheet summary of GM engineering work order history on the Subject Component in the Subject Vehicles is provided in the G232301_2_GM_CONF folder; subfolder labeled “Q_9”.

REQUEST 10

Produce one of each of the following:

- a. Any kits that have been released, or developed, by GM for use in service repairs to the subject component/assembly which relate, or may relate to the alleged defect in the subject vehicles.

GM RESPONSE:

There have been no service kits released or developed which relate to the Alleged Defect.

REQUEST 11:

State the number of each of the following that GM has sold that may be used in the subject vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle in which it is used and month/year of sale (including the cut-off date for sales if applicable):

- a. Subject component; and
- b. Any kits that have been released, or developed, by GM for use in service repairs to the subject component/assembly.

For each component part number, provide the supplier's name, address, and appropriate point of contact (name, title, and telephone number). Also identify by make, model and model year, any other vehicles of which GM is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

GM RESPONSE:

The requested sales information for the Subject Component in both production and service versions is provided in the G232301_1_GM folder; subfolder labeled "Q_11." There are two files, one for dealer repair orders and one for customer paid repairs. The dealer RO file summarizes the sales volume by make, model and model year and date of sale. The make, model and model year are not provided in the customer paid file since VIN information is not available.

This data has limited value in analyzing the field performance of a motor vehicle component, because the records do not contain sufficient information to establish the reason for the part sale or, in the case of a dealer sale, whether the part was actually used to repair a customer vehicle or is being held as dealer stock. If the Subject Component was replaced prior to the release date for Recall 14V571, September 12, 2014, it may be related to the recall condition. The Subject Component may also have been replaced for noise, an issue with the inboard attachment to the suspension or outboard attachment to the bushing,¹⁹ for a rear service alignment²⁰ or other conditions not related to the Alleged Defect. It could have also been replaced due to an accident or other pothole related damage. Therefore, it is difficult to draw any conclusions regarding the performance of the Subject Component, or malfunctions thereof, from this data. The dealer RO file shows an increase in part sales for the fourth quarter of 2020, which shows the change in service procedures to require replacement of the Subject Component during a rear service alignment has been effective.

¹⁹ Not at the jam nut to sleeve nut interface.

²⁰ The service bulletins were recently updated to require a part replacement, however, the Subject Component was routinely replaced during a rear service alignment, prior to the updates, if it was unable to be adjusted.

REQUEST 12:

Furnish GM's assessment of the alleged defect in the subject vehicle, including:

- a. The causal or contributory factor(s);
- b. The failure mechanism(s);
- c. The failure mode(s);
- d. The risk to motor vehicle safety that it poses;
- e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and
- f. The reports included with this inquiry.

GM RESPONSE:

GM's assessment of the Alleged Defect in the Subject Vehicles and Peer Vehicles is as follows:

- a. The rear toe link adjuster, the Subject Component, is comprised of a sleeve nut and two jam nuts. The link is adjustable. The design meets all requirements if correct contact is applied between the jam nuts and the sleeve nut and GM's published and publicly available service procedures accurately describe how to achieve the correct contact. If the Subject Component is not properly tightened, a gap may be present between the jam nut and the sleeve nut surfaces. In these cases, fretting corrosion and contaminants in the gap may contribute to wear and loosening of the toe link rod threads and sleeve nut threads over time. However, the presence of corrosion alone, without a gap, may bolster the joint integrity in certain parts, essentially solidifying the joint.
- b. If the Subject Component is not properly tightened there may be improper contact between the jam nut and the sleeve nut, creating a gap. The main factor for this occurrence is whether the vehicle had a rear toe service alignment where there was operator error. That is, the service provider erred in performing the alignment, either by not following the correct torque process or by unreasonably failing to replace a corroded/contaminated Subject Component, which would be standard process for any qualified repair facility.
- c. A metallic clanking noise or chucking noise may occur as the vehicle travels over road bumps. The steering wheel angle may be off-center, to compensate for rear thrust angle change, one of the tires may be angled out, or uneven wear may occur on one of the rear tires compared to the remaining tires. A Service Rear Axle, Electronic Stability Control or Traction Control light may illuminate on the dash. The driver may notice the vehicle pulling or experience a sway or wander while driving. If these warning signs are ignored,

a loose link can wear over time and may separate. A separated link may cause a sudden vehicle instability if it occurs while driving.

- d. This condition does not constitute a defect or pose an unreasonable risk to motor vehicle safety for the following reasons:
 1. The Alleged Defect is the result of a rare occurrence of service operator error during a rear toe service alignment and not a defect.
 2. The design is proven effective when correctly installed and torqued, and GM published service procedures accurately describe how to achieve proper contact.
 3. The rate of potentially related field incidents is low, with an average rate of 0.99 RPTV at 77 MIS. Despite the large population of vehicles in the field (382,202) over an extended period of time, there are only a few minor accidents and injuries that could potentially be associated with the Alleged Defect. As described in Appendix A, none of the reported accidents could be conclusively determined to be caused by the Alleged Defect and may be unrelated.
 4. The condition is detectable to the driver in various ways, as described in items c. and e.
 5. GM has iteratively improved its service procedures to reduce the likelihood of operator error. These service procedures are published and publicly available to both GM dealers and third-party service providers. As of October 2020, these procedures²¹ require replacement of the Subject Component instead of adjusting it during a rear toe service alignment, eliminating the risk of improper service if the service procedures are followed.
 6. GM's analysis of field parts confirms that the Subject Components with no gap after a previous rear toe service alignment, with and without internal thread corrosion, had sufficient thread engagement and joint integrity. In fact, presence of corrosion on a properly tightened toe link may bolster the joint integrity in certain parts, essentially solidifying the joint.
- e. The condition is detectable in numerous ways. The driver may detect a loose toe link by hearing a metallic clanking noise or chucking noise as the vehicle travels over road bumps. The driver may also notice the steering wheel angle off-center, to compensate for rear thrust angle change, notice one of the tires angled out, or uneven wear on one of the rear tires compared to the remaining tires. The driver may also be alerted to the condition by a Service Rear Axle, Electronic Stability Control or Traction Control light on the dash. The driver may notice the vehicle pulling or experience a sway or wander while driving.
- f. The reports included with this inquiry are produced in response to question 8.

²¹ All service procedures involving a rear service alignment, as well as, the safety recall bulletin 14457.

CONCLUSION

While GM will continue to monitor the performance of the Subject Component in the Subject Vehicles in the field, GM concludes, based on current data, that the Subject Component in the Subject Vehicles and Peer Vehicles are not defective and do not pose an unreasonable risk to motor vehicle safety. GM's Responses are based upon its investigation to date and reflect its current information and assessment. GM reserves the right to supplement or amend its Responses as appropriate.

Please contact me if you require further information about this response or the nature or scope of our searches.

Sincerely,



Regina Carto, Executive Director
Global Safety and Field Investigations

cc: Mr. Chris Lash
Mr. Antonio Moore
ODI_IRresponse@dot.gov

Enclosures

G232301_1_GM – Public copy of GM's document production