
Thomas McCarthy
Head, Vehicle Safety Compliance and
Product Analysis

September 12, 2019

Mr. Scott Yon
Chief, Vehicle Defects Division – B
Office of Defects Investigation, NVS-212
U.S. Department of Transportation
National Highway Traffic Safety Administration
Office of Defects Investigation
Room W48-314
1200 New Jersey Avenue SE
Washington, D.C. 20590

Reference: NEF0102bes; EA19-001

Dear Mr. Yon:

Enclosed is the response of FCA US LLC (“FCA US”) to the July 16, 2019, Information Request issued in the above-referenced investigation. This constitutes FCA US’s full response to this Information Request.

FCA US is submitting to the Chief Counsel’s Office, via courier for next day delivery, an accompanying request for confidentiality pursuant to 49 C.F.R. Part 512 and Exemption 4 to the Freedom of Information Act.

Sincerely,



Thomas McCarthy
Head, Vehicle Safety Compliance and Product Analysis

Attachment and Enclosures
cc. Kerry Kolodziej, Chief Counsel’s Office

Preliminary Statement

On April 30, 2009, Chrysler LLC, the entity that manufactured and sold the certain vehicles that may be discussed in this Information Request, filed a voluntary petition for relief under Chapter 11 of Title 11 of the United States Bankruptcy Code.

On June 10, 2009, Chrysler LLC sold substantially all of its assets to a newly formed company later known as Chrysler Group LLC. Pursuant to the sales transaction, Chrysler Group LLC assumed responsibility for safety recalls pursuant to the 49 U.S.C. Chapter 301 for vehicles that were manufactured and sold by Chrysler LLC prior to the June 10, 2009, asset sale.

On June 11, 2009, Chrysler LLC changed its name to Old Carco LLC. The assets of Old Carco LLC that were not purchased by Chrysler Group LLC, as well as the liabilities of Old Carco that were not assumed, remain under the jurisdiction of the United States Bankruptcy Court – Southern District of New York (In re Old Carco LLC, et al., Case No. [REDACTED]).

Effective December 15, 2014, Chrysler Group LLC changed its name to FCA US LLC (“FCA US”).

Note: Unless indicated otherwise in the response to a question, this document contains information up to and through July 16, 2019, the date this Information Request (“IR”) was received by FCA US.

This document and the associated enclosures and tables referenced herein contain FCA US’ response to the IR issued in Investigation EA19-001, as clarified via email with Scott Yon of the National Highway Traffic Safety Administration’s (“NHTSA”) Office of Defects Investigation (“ODI”) on July 30, 2019 and August 29, 2019. Those clarifications provide in substance:

- FCA US’ Responses herein are limited to the Subject Vehicles as that term is defined and limited in the IR and Attachment One thereto.
- Ram 2500, 3500, 4500, and 5500 vehicles will not be considered Subject Vehicles as that term is defined and limited in the IR and further specified in Attachment One thereto. As such, information pertaining to those vehicles will be excluded from this Response.
- In response to this IR, FCA US will not include information regarding reports of alleged frontal crashes with airbag nondeployment where EOS has been ruled out as a cause.
- In response to Request No. 1, subpart d, FCA US will provide a separate table containing production part number(s) and, to the extent they are distinct, service part number(s) for each Subject Vehicle Make, Model, and Model Year.
- In determining responsiveness to Request No. 2, FCA US preliminarily will review each allegation of nondeployment in a frontal crash for which vehicle photos are available to

determine if additional assessment of the incident is necessary, based on evidence of engine compartment intrusion and/or possible damage to sensor wires. FCA US will not provide any assessment regarding whether airbag deployment was warranted. FCA US will deem any incidents without any indication of frontal crash as non-responsive, and thus will not include those incidents in this Response.

- For reports of crash with nondeployment as to which there are neither inspection reports nor photos in FCA US' records, FCA US' Response will include information on the following two categories of incidents:
 - For 2009 Dodge Ram 1500 vehicles, FCA US will provide records involving any allegation of nondeployment in frontal crash situations or where the impact location was either unknown or unspecified.
 - For all remaining Subject Vehicles, FCA US will provide records involving any allegation of nondeployment in frontal crash situations or where the impact location was unknown or unspecified only to the extent that those records indicate the presence of an associated injury or fatality.

Information as to these incidents without inspection reports or photos will be provided in response to Request Nos. 2 and 4 only.

- In response to Request No. 3, subpart k, FCA US will only provide a description and location of the alleged injury to the extent that such information has been provided to FCA US.
 - In response to Request No. 7(i), FCA US refers NHTSA to the ORC supplier as the entity most likely to possess responsive information. Therefore, by agreement with the Agency, FCA US will not provide a substantive response to this portion of Request No. 7.
 - In response to Request No. 8, FCA US will provide the requested information as identified in its Response to Request No. 1, subpart d.
 - In response to Request No. 10, at this time, FCA US will provide requested information relating to the configuration of the Model Year 2009 Dodge Ram 1500, forward of the firewall, with the most electrical content.
-

1. **State, by model and model year, the number of Subject Vehicles FCA has manufactured for sale or lease in the United States. Separately, for each Subject Vehicle manufactured to date by FCA, state the following:**
 - a. **Make;**
 - b. **Model;**
 - c. **Model Year; and**
 - d. **The part number(s) (service and engineering) of the Subject Component.**

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

A1. FCA US' responses to subparts (a) through (c) of this Request are located in **ENCLOSURE 01** and titled EA19-001_PRODUCTION DATA.accdb. The response for subpart (d) of this Request is located in **ENCLOSURE 01** and titled TABLE 1_EA19-001_PART NUMBERS_CONF BUS INFO.pdf.

2. **State, by model and model year the number of each of the following, received by FCA, or of which FCA 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 for ACUs returned from the field or from test vehicles;**
 - d. **Reports involving a crash, injury or fatality;**
 - e. **Property damage claims;**
 - f. **Third-party arbitration proceedings where FCA is or was a party to the arbitration; and**
 - g. **Lawsuits, both pending and closed, in which FCA is or was a defendant or codefendant.**

For subparts "a" through "g," 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 "d" through "g," provide a summary description of the alleged problem and causal and contributing factors and FCA assessment of the problem, with a summary of the significant underlying facts and evidence. For items "f" and "g," 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.

A2. FCA US has conducted a reasonable and diligent search of the normal repositories of information potentially responsive to this request. In compiling its response to this Request, FCA US reviewed records relating to the Subject Vehicles of each allegation of nondeployment in a frontal crash for

which vehicle photos were available and, based on that review, determined if additional assessment of the incident was necessary based on evidence of engine compartment intrusion and/or possible damage to sensor wires. FCA US also reviewed additional reports alleging nondeployment in a frontal collision or a collision with unknown or unspecified impact location.

Following that review FCA US has not identified any confirmed incident of the Alleged Defect in any of the Subject Vehicles. Nonetheless, per agreement with the Agency as outlined above, FCA US has identified three categories of incidents where the potential existence of the Alleged Defect could not be definitively ruled out. FCA US provides information relating to these categories of incidents in response to this Request in an abundance of caution. However, the fact that FCA US cannot definitively rule out the potential existence of the Alleged Defect is not, and should not be construed as, an indication or admission that the Alleged Defect was involved in any of those incidents.

With this understanding, the three categories of incidents included in FCA US' Response to this Request are:

1. Incidents as to which, following a review of any available inspection report and/or photos, the presence of the Alleged Defect in a Subject Vehicle could not definitively be ruled out;
2. Where FCA US does not have an inspection report or additional information enabling any assessment of the allegations, all alleged airbag nondeployment incidents involving 2009 MY Dodge Ram 1500 vehicles that arise from a frontal collision or a collision with unknown or unspecified impact location; and
3. Where FCA US does not have an inspection report or additional information enabling any assessment of the allegations, all alleged airbag nondeployment incidents involving any Subject Vehicle that arise from a frontal collision or a collision with unknown or unspecified impact location and which allege injuries or fatalities.

Information related to these three categories of reports comprises FCA US' responses to subparts (a) through (g) of this Request. That information is located **ENCLOSURE 02** and titled EA19-001_ALLEGED DEFECT NOT RULED OUT.pdf, EA19-001_2009 RAM 1500 NO INSPECTION.pdf, and EA19-001_OTHER NO INSPECTION INJURY FATALITY.pdf, respectively.

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. **FCA'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;**
- i. **Whether a crash is alleged;**
- j. **Whether property damage is alleged;**
- k. **Number of alleged injuries, if any;**
 - i) **The AIS score of the injuries; and**
 - ii) **Description of injury and location**
- l. **Number of alleged fatalities, if any; and**
- m. **All applicable indicators for the Alleged Defect (items A through H, as identified above).**

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

A3. As clarified above, per agreement with the Agency, FCA US' responses to subparts (a) through (m) of this Request are limited to those incidents identified in response to Request No. 2 for which FCA US' records include an inspection report, photos, or other material that did not allow FCA US to eliminate the possibility of the existence of the Alleged Defect. FCA US notes in response to subpart k(i) that it was unable to locate any indication of any AIS scores in any of the relevant records of these incidents and, as such, no AIS score information can be provided as part of this response. With this limitation, FCA US' responses to this Request, portions of which have been designated as entitled to confidential treatment pursuant to 49 C.F.R. Part 512 and Exemption 4 to the Freedom of Information Act, are located in **ENCLOSURE 03** and titled EA19-001_REQUEST NUMBER TWO DATA_CONF BUS INFO.acbdb.

4. Produce copies of all documents related to each item within the scope of Request No. 3. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method FCA used for organizing the documents. Describe in detail the search methods and search criteria used by FCA to identify the items in response to Request No.3.

A4. FCA US has conducted a reasonable and diligent search of the normal repositories of information potentially responsive to this request. Documents related to each item within the scope of Request No. 2 were gathered by using information such as vehicle model, model year, and a word search using words reasonably related to the reports sought by this IR. The keyword search criteria used in this search are included in Table 2, which is located in **ENCLOSURE 04** and titled EA19-001_TABLE 2 – KEYWORD SEARCH CRITERIA.pdf.

Copies of the available documents related to the three categories within the scope of Request No. 2 can be found in **ENCLOSURE 04**, which contains three folders with copies of the available consumer complaints, legal claims and legal summaries. The related customer complaint documents are arranged in folders by complaint number. Legal summaries are contained in a pdf document, one pertaining to each of the three categories described in FCA US' response to Request No. 2, and associated backup are arranged in folders by claimant name.

5. 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, FCA. For each such action, provide the following information:
- Action title or identifier;
 - The actual or planned start date;
 - The actual or expected end date;
 - Brief summary of the subject and objective of the action;
 - Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and
 - 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.

- A5. FCA US's responses to subparts (a) through (f) of this Request are located in **ENCLOSURE 05** and are summarized in the chart titled EA19-001 ACTIONS SUMMARY_CONF BUS INFO.pdf. Copies of responsive documentary information are included within **ENCLOSURE 05**.

6. Testing by multiple parties indicates that negative voltage transients, with respect to chassis ground, on the satellite sensor signal wires are capable of producing the EOS damage to the DS84 ASIC which leads to resets and/or shutdown of the ACU during crash events. Separately from Response 5, 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 which evaluates performance of the Subject Component ACU designs and/or peer ACU designs, from any ACU supplier including ZF, for transient voltage susceptibility on the satellite crash sensor, battery power, or ground wires, that have been conducted, are being conducted, are planned, or are being planned by, or for, FCA. For each such action, provide the following information:
- Action title or identifier (can be cross referenced to actions provided in Response 5);
 - The actual or planned start date;
 - The actual or expected end date;
 - Brief summary of the subject and objective of the action;
 - Engineering group(s)/supplier(s) responsible for designing and for conducting the action;
 - Copies of all procedures used to conduct the tests, along with a list of test equipment utilized for the tests; and
 - A 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.

A6. FCA US's responses to subparts (a) through (g) of this Request are located in **ENCLOSURE 06** and are summarized in the chart titled EA19-001 ACTIONS SUMMARY_TRANSIENT_CONF BUS INFO.pdf. Copies of responsive documentary information are included within **ENCLOSURE 06**.

7. For every Subject Component ACU design which shares a similar satellite sensor protection design (i.e. equivalent circuit protection devices providing similar levels of negative transient protection), provide the following:

- i) A simplified ACU circuit showing the protection devices for each satellite sensor line along with any current limiting devices incorporated into the ACU power circuitry separate from the satellite sensor communications lines. Additionally, the data sheet for each device shown in the circuit diagram shall be included with this submission.**
- ii) The level of negative transient protection specified, in both voltage level and duration at that voltage level. If available, include a voltage versus duration curve (i.e. the envelope) depicting the protection capability. If the negative transient protection has been evaluated using a different electrical measurement/metric (i.e. current, power, or other parameter), provide a detailed explanation of the parameter used and provide duration and parameter versus duration information as requested above for voltage.**
- iii) All actions identified in Response 6(a) which apply to each particular ACU design.**

A7. In response to Request No. 7(i), FCA US refers NHTSA to the ORC suppliers as the entities most likely to possess responsive information. Therefore, by agreement with the Agency, FCA US will not provide a substantive response to Request No. 7(i).

With respect to Request No. 7(ii), FCA US responds that, for the Subject Vehicles, FCA US did not specify the level of negative transient protection.

With respect to Request No. 7(iii), FCA US refers NHTSA to page 42 of the file entitled "ORC EOS 09-06-2016VRC - Final-V2_CONF BUS INFO.pdf," located in **ENCLOSURE 5**, and to pages 2, 5, 11, 12 of the file entitled "Transient Testing Updated 17NOV2015_CONF BUS INFO.pdf," also located in **ENCLOSURE 5**.

8. Provide the following information for each unique part number identified in response 1(e):

- a. Original design specification sent to supplier;**
- b. All modifications or changes made by, or on behalf of, FCA 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;**
- c. The date or approximate date on which the modification or change was incorporated into vehicle production;**
- d. A detailed description of the modification or change;**

- e. **Whether the modified component can be interchanged with earlier production components; and**
- f. **The applicable simplified circuit identified in Response 7.**

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

A8. FCA US' responses to subparts (a) through (e) of this Request are located in **ENCLOSURE 08** and titled EA19-001 CHANGE HISTORY_CONF BUS INFO.pdf. FCA US refers NHTSA to the ORC supplier as the entity most likely to possess information responsive to subpart (f) of this Request.

9. **For the subject vehicles, provide for each model and model year, a list of all possible fault codes and/or diagnostic trouble codes stored in the ACU or other modules located anywhere on the vehicle which could be associated with the alleged defect. For each fault code provide:**
- a. **The identifier for the code;**
 - b. **The module or other hardware which contains the code;**
 - c. **A description of the code;**
 - d. **The conditions which result in the code being set; and**
 - e. **The tools, software, and procedures required to download the code.**

A9. FCA US' responses to subparts (a) through (e) of this Request are located in **ENCLOSURE 09** and titled EA19-001 FAULT CODES_CONF BUS INFO.pdf. Portions of this response have been designated as entitled to confidential treatment pursuant to 49 C.F.R. Part 512 and Exemption 4 to the Freedom of Information Act.

10. **Produce engineering drawings, photos, and/or documents for each unique design version of the Subject Vehicles related to the electrical wiring configurations forward of the firewall:**
- a. **Original design specification;**
 - b. **Modified design specification;**
 - c. **Location(s) of the front impact sensors;**
 - d. **Description of every unique bundle cross-section including:**
 - i) **Descriptions of each wire in the bundle cross-section;**
 - ii) **Indicate whether the wire is connected to the ACU and whether the wire also connects to a DS84 ASIC**
 - iii) **The voltage and current load specifications for each wire;**
 - iv) **Description of any electrical shielding techniques applied to a wire or a sub-group of wires (twisted pair, foil shielding, etc.)**

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

A10. As previously clarified with NHTSA, FCA US' responses to subparts (c) through (d)(ii) of this Request as they relate to the configuration of the Model Year 2009 Dodge Ram 1500 with the most electrical content are located in **ENCLOSURE 10**. After a reasonable and diligent search, FCA US was unable to locate any materials responsive to sub-part a) of this Request. Further, FCA US has not identified any changes to design specifications following its review of the relevant Change Notices response to subpart b). As such, FCA US does not possess information responsive to subparts (a) and (b) of this Request. FCA US notes that, in some instances, certain of the original design drawing files have embedded data files; where this is the case, for the sake of completeness, FCA US also provides a copy of any embedded data file.

In response to Request No. 10, subparts d. iii) and d. iv), FCA US refers NHTSA to the wire harness supplier as the entity most likely to possess responsive information.

11. Furnish FCA'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. Any prior safety recalls FCA has conducted to address EOS related failures of the subject ACU, the remedy that was utilized in that recall action, and how, in FCA's assessment, that action addresses any residual risk of an EOS failure of the DS84 ASIC;**
- e. The risk to motor vehicle safety that it poses; and**
- f. 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.**

A11. FCA US has reviewed the data provided in response to the Requests above. That review has not revealed a single confirmed incident of the Alleged Defect in any of the approximately 3 million Subject Vehicles. Rather, as detailed below, that data leads FCA US to conclude there is no unreasonable risk to motor vehicle safety with respect to FCA US vehicles that contain the DS84 ASIC built without cross car wiring or FCA US vehicles built with an upgraded DS84 ASIC (which provides higher levels of ASIC protection) with cross car wiring. Stated more simply, all FCA US vehicles that may exhibit the Alleged Defect in the Subject Component already have been recalled.

FCA US has investigated the Alleged Defect in the Subject Component multiple times, dating back to 2015. In April 2015, FCA US initiated an investigation that ultimately resulted in the recall of over 1.4 million vehicles in the U.S., and nearly 2 million vehicles worldwide.¹

Based on data and engineering analysis, that investigation concluded that the Alleged Defect has the potential to occur when three specific factors are present. Those factors are: 1) a specific ORC family and ASIC design, which is less robust against certain electrical overstress; 2) front impact sensor cross-car wire routing; and 3) certain crash events. The investigation did not find any incident of electrical overstress in a crash without all three of these factors present.

¹ NHTSA Recall Number 16V-668; FCA US Recall S61.

On September 13, 2016, FCA US submitted to NHTSA a Defect Information Report (“DIR”) related to the failure of certain airbag control units supplied by ZF-TRW. NHTSA designated this campaign as Recall Number 16V-668; internally, FCA US assigned S61 to this recall. Recall S61 affected 1,435,625 vehicles in the U.S. The description of defect contained in FCA US’s DIR submitted for Recall S61 continues to be accurate today, and described the defect as follows:

The affected “...vehicles may experience loss of air bag and seat belt pretensioner deployment capability in certain crash events due to a shorting condition resulting in a negative voltage transient that travels to the Occupant Restraint Controller (“ORC”) via the front impact sensor wires damaging an Application Specific Integrated Circuit (“ASIC”) in the ORC. The root cause of the failure was determined to be a combination of the relative susceptibility of the subject ORC ASIC to negative transients and the front acceleration sensor signal cross-car wire routing in certain crash events.”

FCA US identified the risk to motor vehicle safety as “[t]he potential loss of air bag and seat belt pretensioner deployment capability in such crash events may increase the risk of injury in a crash.”

The remedy for Recall S61 is replacement of the ORC on all affected vehicles. The replacement ORC includes several enhancements, including: 1) the removal of Schottky diodes on each satellite sensor DSI (Low) signal; 2) the addition of higher current capacity Schottky diodes to each satellite sensor DSI (High) and DSI (Low) signal; 3) the addition of a circuit to limit in-rush current at power on to the ignition inputs; and 4) the addition of a current limiting device to ASIC diagnostic power input. For additional information regarding Recall S61, FCA US refers the Agency to FCA US’ DIR, including the chronology, which is incorporated herein by reference.

FCA US’ second investigation relating to the Alleged Defect focused on vehicles containing the suspect ORC, but which were determined not to be included within the scope of Recall S61. Some of the vehicles included in this second investigation are Subject Vehicles, as those are defined by this Information Request. Specifically, FCA US once again looked into vehicles without cross-car wiring and equipped with a DS84 ASIC.

The investigation used diagnostic trouble codes (“DTCs”), when available, to rule out EOS as a cause of airbag nondeployment. The relevant DTCs are necessary for, but not sufficiently dispositive to indicate the presence of EOS. The relevant DTCs are located in **ENCLOSURE 09** and titled EA19-001 FAULT CODES.pdf.

The second investigation did not find a single incident of airbag nondeployment attributable to the Alleged Defect in the non-recalled population of FCA US vehicles, including any Subject Vehicle, and the investigation accordingly was closed.

In early 2018, Hyundai and Kia commenced recalls (18V-137 and 18V-363, respectively) relating to NHTSA formal investigation PE18-003. As NHTSA states in its Opening Resume for this investigation, the Hyundai and Kia vehicles recalled “used ACUs that had the lowest levels of ASIC protection.”² It is FCA US’ understanding that the vehicles involved those recalls do not have front impact sensor cross-car wire routing.

² NHTSA, in its Opening Resume for this investigation, recognizes that “...recalled FCA vehicles used a mid-level form of ASIC protection.”

Mr. Scott Yon
Reference: NEF0102bes; EA19-001
September 13, 2019

ATTACHMENT

Page 11 of 11

FCA US believes its multiple investigations into the EOS issue have been duly diligent and that the results of those investigations are conclusive. Those results can and should be relied upon as confirmation that FCA US' prior recall efforts identified the appropriate scope for remediating the issue in FCA US vehicles. NHTSA's Opening Resume in this investigation is consistent with this conclusion:

"ODI has not identified any EOS failures in the non-recalled FCA population."

In sum, FCA US' investigation into this Information Request has not revealed a single confirmed incident of the Alleged Defect in any Subject Vehicles. For these reasons, FCA US believes it has fulfilled its obligations under the Motor Vehicle Safety Act and NHTSA regulations to investigate and effectively remedy defects that affect motor vehicle safety. As such, FCA US respectfully requests that this investigation be closed with respect to FCA US vehicles.