

Mercedes-Benz

Mercedes-Benz USA, LLC  
A Daimler Company

December 9, 2011

Frank S. Borris, Director  
Office of Defects Investigation  
Enforcement  
National Highway Traffic Safety Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590

**Re: Engineering Analysis EA11-003 to Investigate High-Pressure Fuel Pump Failure in MY 2009-2012 Volkswagen and Audi Vehicles; Response to Peer Vehicle Information Request**

Dear Mr. Borris:

This letter is submitted by Mercedes-Benz USA, LLC (MBUSA) on behalf of its parent company, Daimler AG (collectively "Mercedes") to the National Highway Traffic Safety Administration ("NHTSA" or "Agency") in response to the Office of Defects Investigation's request for peer vehicle information relating to the Agency's engineering analysis to investigate complaints of high-pressure fuel pump failure in certain 2009 through 2012 Volkswagen and Audi vehicles.

**Responses to Requests No. 1-19**

**Request No. 1:** *State, by peer vehicle model year, model, and engine the number of peer vehicles Mercedes has manufactured for sale or lease in the United States. Separately, for each peer vehicle manufactured to date by Mercedes, state the following:*

- a. *Vehicle identification number (VIN);*
- b. *Model;*
- c. *Model Year;*
- d. *Date of manufacture;*
- e. *Date warranty coverage commenced; and*
- f. *The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).*

*Provide the table in Microsoft Access 2007, or a compatible format, entitled "PRODUCTION DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.*

**Response to Request No. 1:**

Mercedes has manufactured 51,965 peer vehicles for sale or lease in the United States. The information requested in Request No. 1a-f is provided in Attachment 1, Production Data.

**Request No. 2:**

*State, by model and model year the number of each of the following received by Mercedes or of which Mercedes is otherwise aware, which relate to, or may relate to, instances of the subject condition in the peer vehicles; including subtotals for the numbers alleging subject component failure and the numbers alleging engine stall occurred:*

- a. Consumer complaints, including those from fleet operators;*
- b. Field reports, including dealer field reports;*
- c. Reports involving a crash, injury, or fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a peer vehicle, property damage claims, consumer complaints, or field reports;*
- d. Property damage claims;*
- e. Third-party arbitration proceedings where Mercedes is or was a party to the arbitration; and*
- f. Lawsuits, both pending and closed, in which Mercedes is or was a defendant or codefendant.*

*For subparts "a" through "d" 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 Mercedes' 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.*

**Response to Request No. 2:**

- a. Mercedes has received [REDACTED] consumer complaints in its Customer Assistance Center which relate to, or may relate to, the subject condition in the peer vehicles. The additional detail requested in response to Request No. 2 is incorporated in the response to Request No. 3.
- b. Mercedes has received no reports from field personnel which relate to, or may relate to, the subject condition in the peer vehicles.
- c. Mercedes has received no reports alleging a crash, injury or fatality relating to the subject condition in the peer vehicles.
- d. Mercedes has received no property damage claims relating to the subject condition in the peer vehicles.
- e. Mercedes is not aware of any arbitration proceedings in which it is or was a party which relate to, or may relate to, the subject condition in the peer vehicles.
- f. Mercedes is not aware of any lawsuits in which it is or was a defendant which relate to, or may relate to, the subject condition in the peer vehicles.

**Request No. 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. *Mercedes 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), address, and telephone number;*
- d. *Vehicle's VIN;*
- e. *Vehicle's model and model year;*
- f. *Vehicle's mileage at time the subject condition was observed or occurred (incident);*
- g. *Incident date;*
- h. *Report or claim date;*
- i. *Whether failure or malfunction of the subject component is alleged;*

- j. Whether fuel quality concerns are cited as an actual or potential cause or contributor;*
- k. Whether an engine stall is alleged;*
- 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 2007, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.*

**Response to Request No. 3:**

The information requested in Request No. 3 is provided in Attachment 2, Request Number Two Data.

**Request No. 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 Mercedes used for organizing the documents.*

**Response to Request No. 4:**

The information requested in Request No. 4 is incorporated into Attachment 2, Request Number Two Data.

**Request No. 5:** *State, by peer vehicle model year, model, and engine the number of each of the following, received by Mercedes, or of which Mercedes is otherwise aware, which relate to, or may relate to, acknowledged incidents of misfueling in the peer vehicles (e.g., requests for technical assistance related to repair procedures):*

- a. Consumer reports, including those from fleet operators;*
- b. Field reports, including dealer field reports;*

- c. *Reports involving a crash, injury, or fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a peer vehicle, property damage claims, consumer complaints, or field reports; and*
- d. *Property damage claims.*

*For subparts "a" through "d" 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).*

**Response to Request No. 5:**

- a. Mercedes has received [REDACTED] consumer complaints in its Customer Assistance Center which relate to, or may relate to, misfueling in the peer vehicles
- b. Mercedes has received [REDACTED] reports from field personnel which relate to, or may relate to, misfueling in the peer vehicles.
- c. Mercedes has received no reports alleging a crash, injury or fatality relating to misfueling in the peer vehicles.
- d. Mercedes has received no property damage claims relating to misfueling in the peer vehicles.

**Request No. 6:**

*Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 5, state the following information:*

- a. *Mercedes 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), address, and telephone number;*
- d. *Vehicle's VIN;*
- e. *Vehicle's model and model year;*
- f. *Vehicle's mileage at time of incident;*

- g. Misfuelling incident date;*
- h. Report or claim date;*
- i. Whether failure or malfunction of the subject component is alleged;*
- j. Whether an engine stall is alleged;*
- k. Whether a crash is alleged;*
- l. Whether property damage is alleged;*
- m. Number of alleged injuries, if any; and*
- n. Number of alleged fatalities, if any.*

*Provide this information in Microsoft Access 2007, or a compatible format, entitled "MISFUELLING DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.*

**Response to Request No. 6:**

The information requested in Request No. 6 is provided in Attachment 3, Misfueling Data.

**Request No. 7:** *Produce copies of all documents related to each item within the scope of Request No. 5. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Mercedes used for organizing the documents.*

**Response to Request No. 7:**

The documents on which the response to Request No. 5 is based are incorporated into Attachment 3, Misfueling Data.

**Request No. 8:** *State, by model, engine and model year the number of the following categories of claims, collectively, that have been paid by Mercedes to date which relate to repair or replacement of the subject component in the peer 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. Mercedes claim number;*
- b. Vehicle owner or fleet name (and fleet contact person) 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;*
- h. Problem code;*
- i. Replacement part number(s) and description(s);*
- j. Concern stated by customer;*
- k. Cause and correction of concern;*
- l. Comment, if any, by dealer/technician relating to claim and/or repair;*
- m. State whether there is a claim for towing expenses associated with the repair (i.e., filed within 5 days before or after the claim repair date); and*
- n. Mercedes' assessment of whether the incident involved an engine stall while driving using the following three categories: (1) stall while driving = "yes;"*  
*(2) stall while driving = no; and*  
*(3) stall while driving = "unknown."*

*Provide this information in Microsoft Access 2007, or a compatible format, entitled "WARRANTY DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.*

**Response to Request No. 8:**

Mercedes has identified [REDACTED] warranty claims that relate to, or may relate to, the subject condition in the peer vehicles. The additional information requested in Request No. 8 is provided in Attachment 4, Warranty Data.

**Request No. 9:**

*Describe in detail the search criteria used by Mercedes to identify the claims identified in response to Request No. 8, including the labor operations, problem codes, part numbers and any other pertinent parameters used and describe how the assessment regarding whether the repair condition resulted in an engine stall incident was made (e.g., analysis of problem codes or customer concern/technician comment text fields). Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to repair or replacement of the subject component and a separate list that are applicable to assessing whether the repair condition resulted in an engine stall while driving incident. State, by make and model year, the terms of the new vehicle warranty coverage offered by Mercedes on the peer 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 Mercedes offered for the peer vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.*

**Response to Request No. 9:**

The claims listed in the response to Request No. 8 were identified using the high pressure diesel fuel pump part numbers.

The peer vehicles are all still covered under Mercedes' normal new vehicle warranty coverage period, which in the United States is four years/50,000 miles.

**Request No. 10:**

*Produce copies of all service, warranty, and other documents that Mercedes has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities, which relate to or may relate to the subject condition in the peer vehicles. This includes, but is not limited to, technical service bulletins, special service messages, 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 Mercedes is planning to issue within the next 120 days.*

**Response to Request No. 10:**

Mercedes has issued the following service documents that relate to, or may relate to, the subject condition in the peer vehicles:

- DTB P-B-07.16/76 (Sept. 4, 2007) (leaking high pressure fuel pump);
- DTB T-B-07.16/77 (Sept. 4, 2007) (leaking high pressure fuel pump); and
- DTB S-B-47.20/48b (Feb. 4, 2009) (diesel fuel jelling at low ambient temperatures)

Copies of these documents are provided in Attachment 5, Service Documents.

**Request No. 11:**

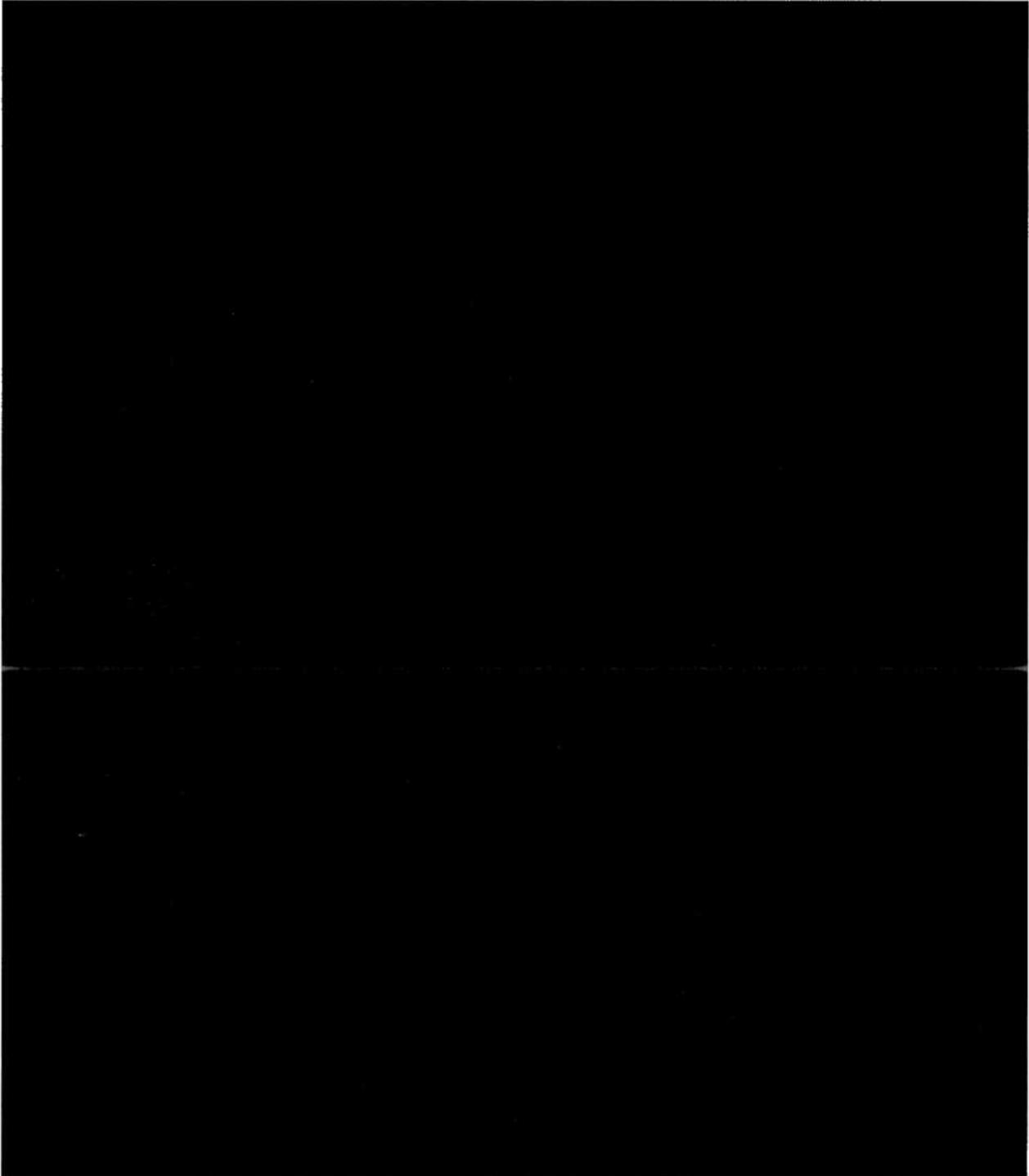
*Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to HPFP drive train durability and performance with low lubricity fuels that have been conducted, are being conducted, are planned, or are being planned by, or for, Mercedes. For each such action, provide the following information:*

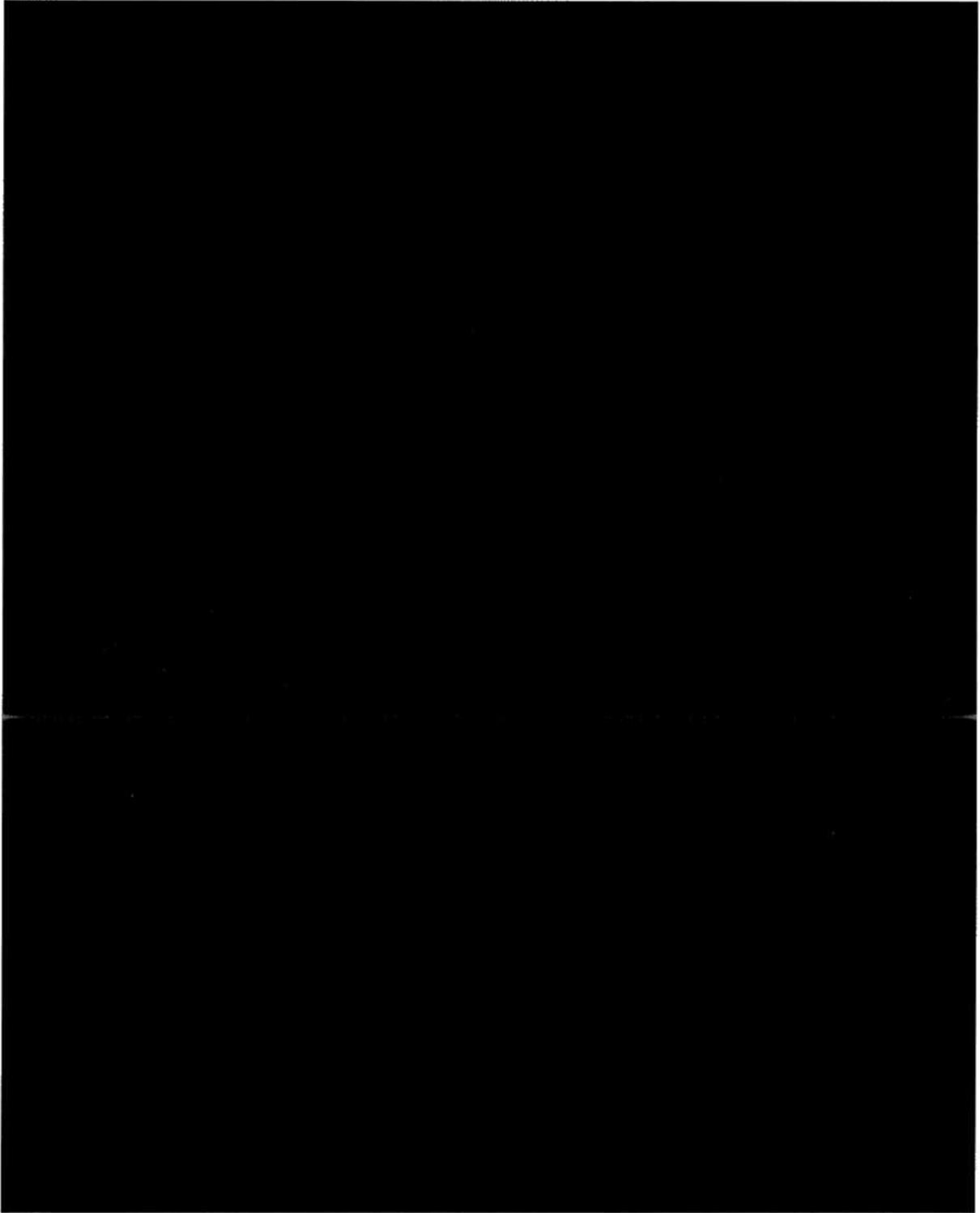
- a. Action title or identifier;*
- b. The actual or planned start date;*
- c. The actual or expected end date;*
- d. Brief summary of the subject and objective of the action;*
- e. Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and*
- f. A brief summary of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

*The response to this request should include a detailed description of all past, present and future actions by any and all engineering working groups (e.g., pump/engine damage task force) of which VW and/or Audi are active members or are otherwise aware. This includes, at a minimum, all of the information requested in items "a" through "f."*

*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.*

**Response to Request No. 11:**





**Request No. 12:** *Describe all modifications or changes made by, or on behalf of, Mercedes 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 HPFP drive train durability and performance with low lubricity fuels. 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; and*
- g. *When the modified component was made available as a service component.*

**Response to Request No. 12:**

There have been no modifications or changes made to the subject component.

**Request No. 13:** *For each month in which Mercedes has sold the following components, state the number of the following components that Mercedes has sold for use in the peer vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle(s) in which it is used and month/year of sale of the component (including the cut-off date for sales, if applicable).*

- a. *High-pressure fuel pumps;*
- b. *Fuel rails; and*
- c. *Fuel tanks.<sup>1</sup>*

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<sup>1</sup> Pursuant to conversations with your staff, the scope of Request No. 13 was limited to high pressure fuel pumps.

*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 (that is, other than peer vehicles) of which Mercedes is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.*

**Response to Request No. 13:**

Mercedes has sold [REDACTED] high-pressure fuel pumps which could be used in the subject vehicles. This includes both warranty and customer pay repairs by Mercedes dealers. This reflects the approximate number of total part sales by Mercedes dealers for the subject component in the peer vehicles, since parts sales data is not recorded by model or model year. Certain Sprinter vans also use the same fuel pump that is used in the peer vehicles.

The additional information requested in Request No. 13 is provided in Attachment 7, Parts Sales Data.

The requested supplier information is as follows:

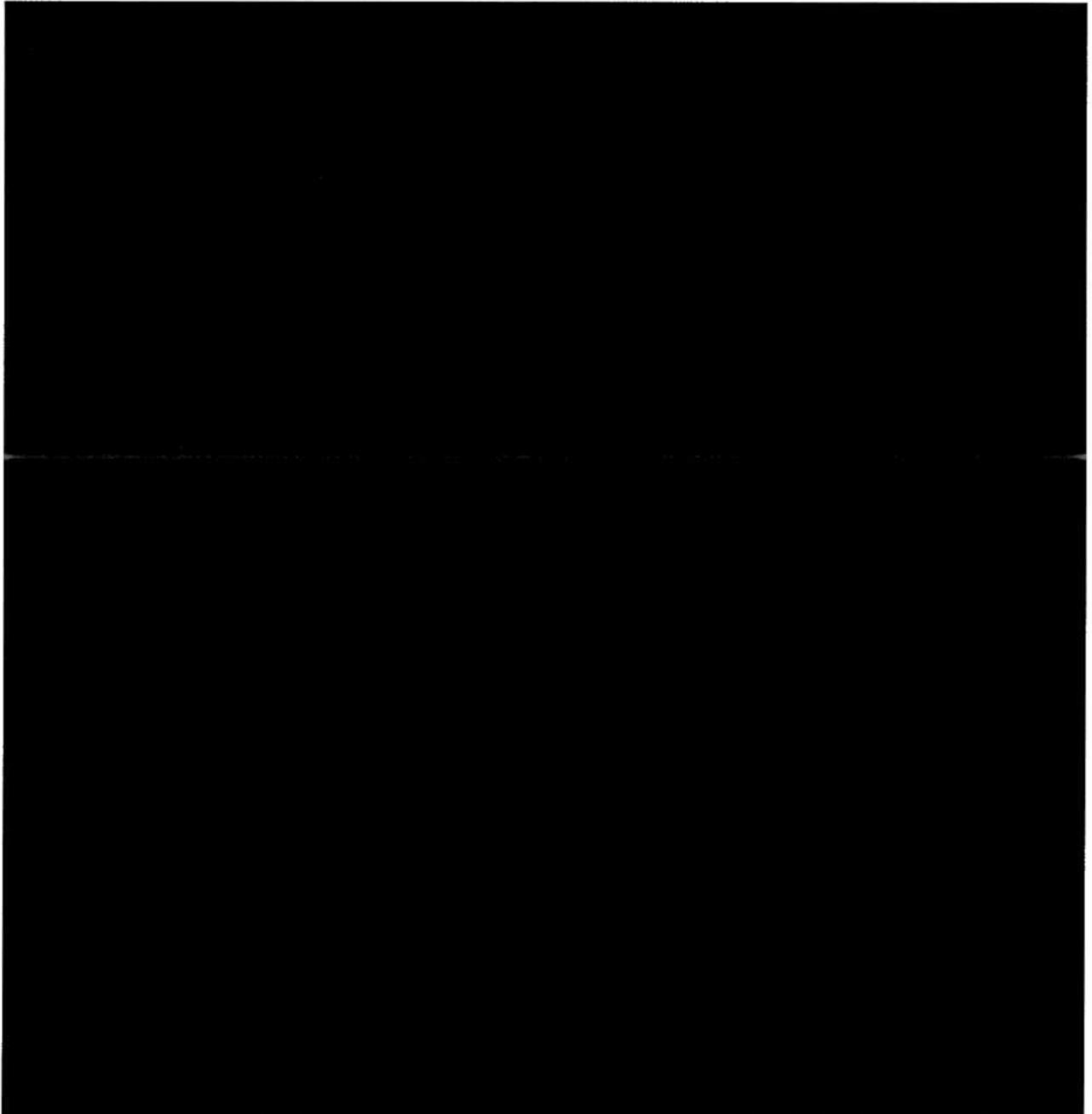
Robert Bosch LLC  
Mr. Jerry Johnson  
C/LSR-NAF1  
Tel: +1 248/ 876 73 81  
USA

**Request No. 14:** *Provide the following information for the common rail fuel systems used in the peer vehicles:*

- a. Basic functional diagrams of each version of common rail system used in the peer vehicles, showing system components and flow paths;*
- b. Ranges of operating pressures for the suction and discharge of the HPFP (i.e., low and high pressure systems);*
- c. Range in operating temperatures for fuel used in the HPFP lubrication system and a description of how HPFP inlet temperature is controlled;*
- d. Filter mesh size(s) and filter replacement criteria;*
- e. Describe all scheduled maintenance requirements;*
- f. A description of all warning lamps and driver information messages associated with the system;*

- g. A description of all Diagnostic Trouble Codes by name and number and the conditions required to set each code; and*
- h. A description of all limp-home operating modes, including the conditions required to implement each mode and the limits on vehicle operation.*

**Response to Request No. 14:**

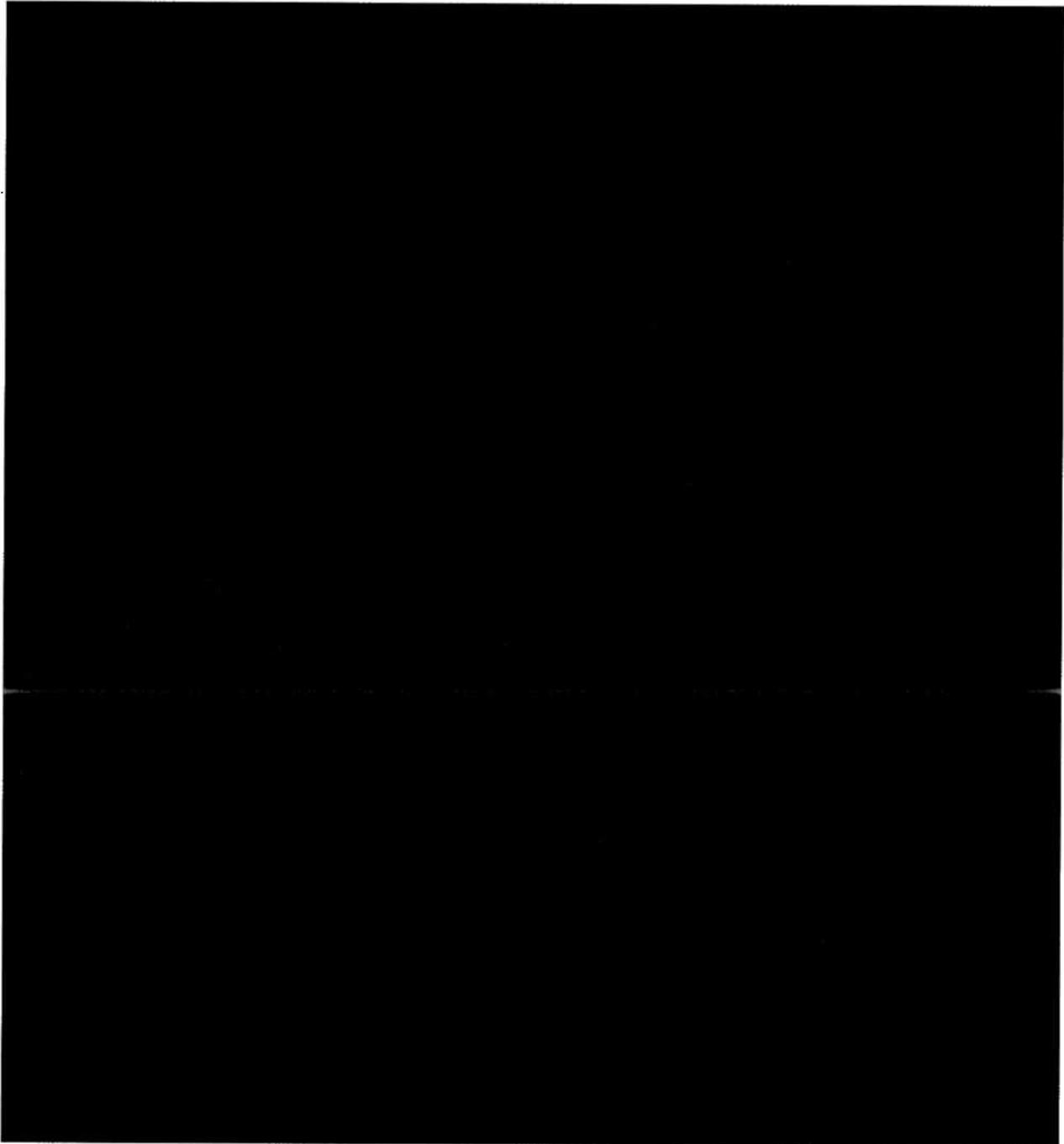


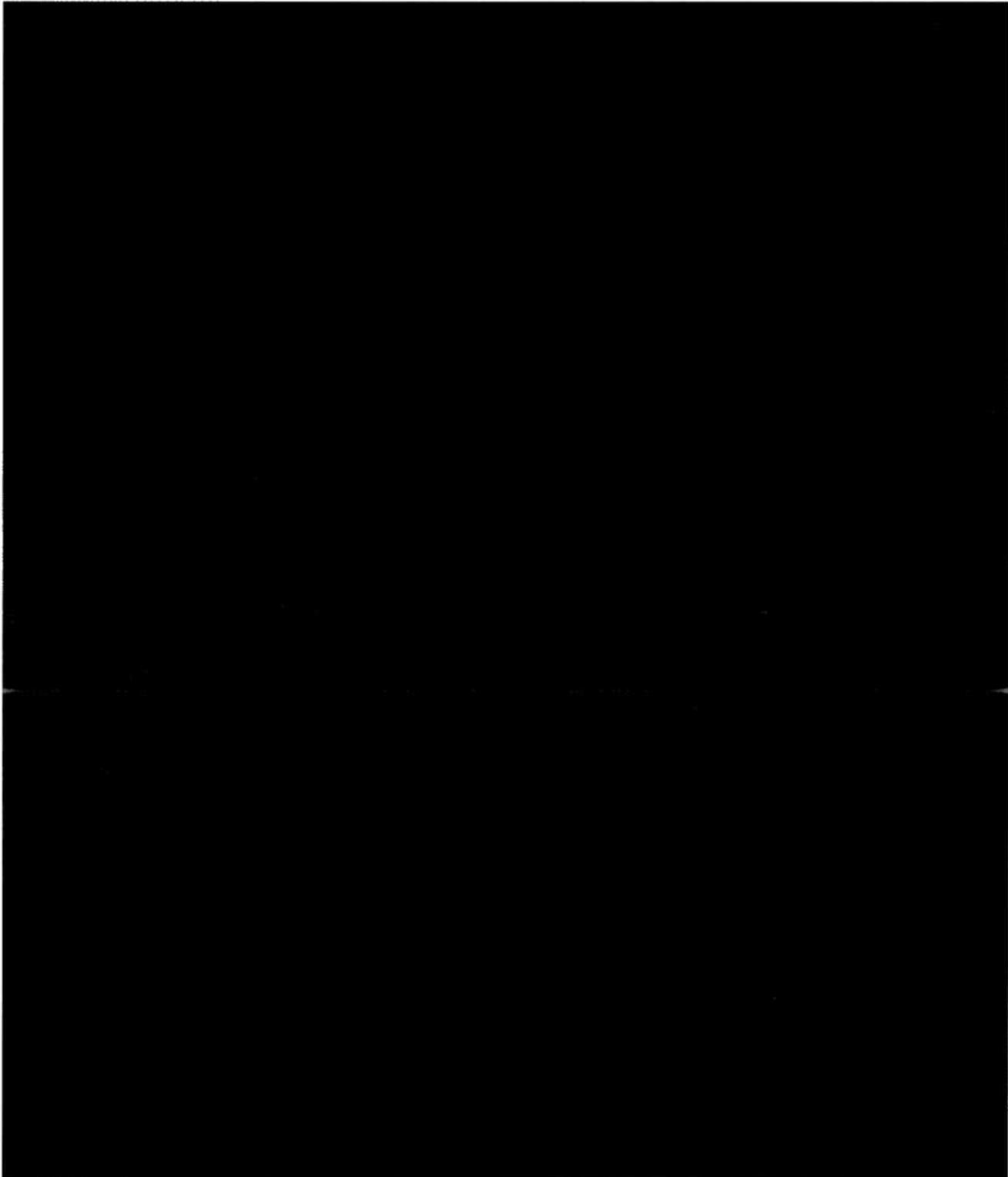
**Request No. 15:**

*Separately for each peer vehicle, provide the following information for the subject component used in that vehicle:*

- a. Specific supplier model name and model number;*
- b. Cross-sectional diagram of the pump showing basic operation of the drive train;*
- c. Ratio of pump speed to engine speed;*
- d. Pump maximum output/discharge pressure;*
- e. Pump minimum inlet/suction pressure;*
- f. Pump durability specifications;*
- g. The material composition and material specifications for all drive train components (e.g., plunger, plunger base, shoe, foot, rider, roller, roller shoe, cam); and*
- h. Copies of all failure mode and effects analyses.*

**Response to Request No. 15:**





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- h. The failure mode validation and effects analyses have been done by our supplier Bosch GmbH.

**Request No. 16:** *Provide the following information regarding the subject component from peer vehicles:*

- a. *Any information, reports, and analyses regarding returned parts that exhibited signs of wear or other deterioration of the drive train; and*
- b. *A tabular summary of all field return analyses and reports.*

**Response to Request No. 16:**

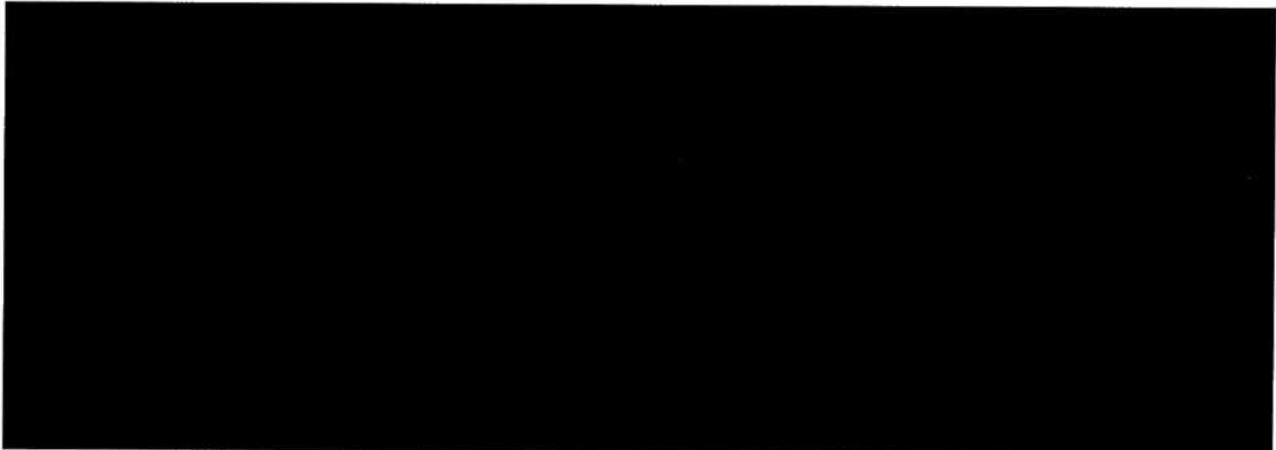
Mercedes has analyzed a number of HPFPs at our Quality Engineering Center (QEC) in Jacksonville, Florida. These analyses determined that in most cases no trouble was found or the pumps failed due to corrosion caused by misfueling or poor fuel quality. The QEC results are presented in Attachment 9, Returned Parts Analysis.

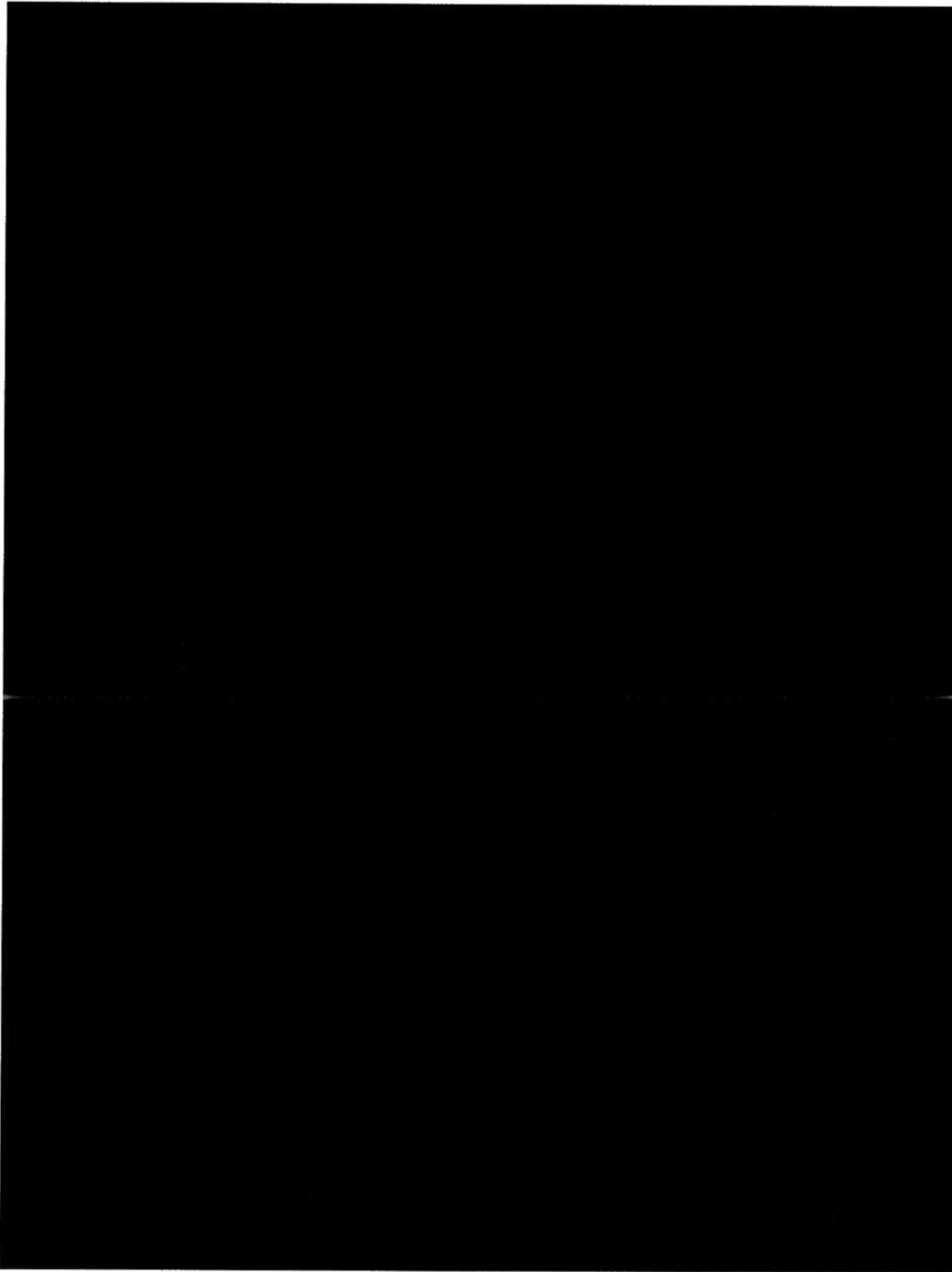
**Request No. 17:** *Provide the following information regarding diesel fuels sold in the United States, and test fuels used by or for Mercedes in the design and development of the fuel system and subject component:*

- a. *Identify and provide copies of all studies and surveys conducted by or for Mercedes and other documents in the possession of and reviewed by Mercedes regarding diesel fuel quality or characteristics in the U.S., and/or diesel fuel delivery system performance concerns related to fuel quality in the United States market from 2004 to date;*

- b. *Describe the fuel properties Mercedes considers in its evaluations of HPFP performance/durability and state the ranges in those properties that Mercedes believes exist in the United States market, from fuel survey data or other sources (provide the means and standard deviations for all sampled data for the United States market);*
- c. *State the specifications for all reference fuels used by Mercedes in testing the subject component, including an explanation of the basis for the lubricity specification;*
- d. *Describe how Mercedes has ensured that the HPFP design in peer vehicles is compatible with diesel fuels sold in the United States and other markets;*
- e. *Describe all testing of the subject component conducted by, or for, Mercedes with gasoline contaminated test fuels, including the purpose of the test, the amount of contamination, the test conditions and the test results;*
- f. *Provide Mercedes' assessment of the amounts of gasoline contamination required to produce the following effects on engine performance: (1) driveability symptoms during city driving (describe symptoms); (2) driveability symptoms during highway driving (describe symptoms); (3) engine stall; and (4) pump damage; and (5) sudden/catastrophic pump failure;*
- g. *Provide Mercedes' assessment of the effects of minor gasoline contamination on engine performance and HPFP performance/durability (provide assessments for contaminations of less than 3 percent and less than 1 percent); and*
- h. *Produce copies of all recommendations and warnings regarding diesel fuel quality that Mercedes has provided to its customers.*

**Response to Request No. 17:**





- h. Information regarding customer fuel quality recommendations and warnings is provided in Attachment 11, Biodiesel Customer Information

**Request No. 18:**

*Provide the following information regarding incidents/repairs in which misfuelling is not acknowledged but suspected in the peer vehicles (Note: the IR definitions for "misfuelling" and "fuel quality concern" do not apply to this request):*

- a. *Does Mercedes distinguish problems from misfuelling from problems involving poor fuel quality for the purposes of determining whether or not repairs to the subject component and/or vehicle are covered by warranty?*
- b. *Describe how Mercedes distinguishes incidents involving misfuelling from incidents involving poor fuel quality in resolving questions about warrantable repairs (e.g., describe test methods, qualitative analyses, performance symptoms or diagnostic codes that would indicate or suggest misfuelling);*
- c. *State how Mercedes resolves disputes concerning warranty coverage related to suspected fuel quality concerns;*
- d. *Describe and provide copies of all guidance provided to dealers and/or zone offices related to diagnosing, documenting and repairing fuel system failures in which fuel quality is a suspected cause or contributor;*
- e. *Describe the repair procedures for a peer vehicle that has been fueled with gasoline, for situations where (1) the engine was not started after a misfuel; and (2) the engine was started after a misfuel;*
- f. *Describe the repair procedures for a peer vehicle that has experienced catastrophic HPFP drive train failure (i.e., metallic particles/debris in the fuel system); and*

- g. Describe all misfuel countermeasures that Mercedes has implemented in the peer vehicles or is considering for future production light duty diesel vehicles in the United States market.*

**Response to Request No. 18:**



- d. Guidance to dealers regarding the analysis procedures described above is included in Attachment 12, Fuel Analysis Instructions.
- e. In the case of a vehicle fueled with gasoline in which the engine was not started after misfueling, the customer is instructed to have the vehicle towed to a dealership, after which the tank is emptied and flushed and the fuel filter is changed. In the event that the engine was started after misfueling, the repairs will depend on the specific circumstances of the misfueling. The repair procedures are described in Attachment 13, Repair Procedures.
- f. The repair procedures for a vehicle that has experienced catastrophic HPFP drive train failure will depend on the specific nature of the failure and resulting vehicle damage.



[REDACTED] Finally, Mercedes has implemented measures to help drivers avoid misfueling. For instance, different tank inlet diameters are provided for gasoline and diesel, so that diesel fuel cannot be filled into a gasoline tank neck. Also, driver warnings are provided on the fuel tank cap, fuel tank door, and in the operator's manual. These warnings are shown in Attachment 14, Driver Warnings.

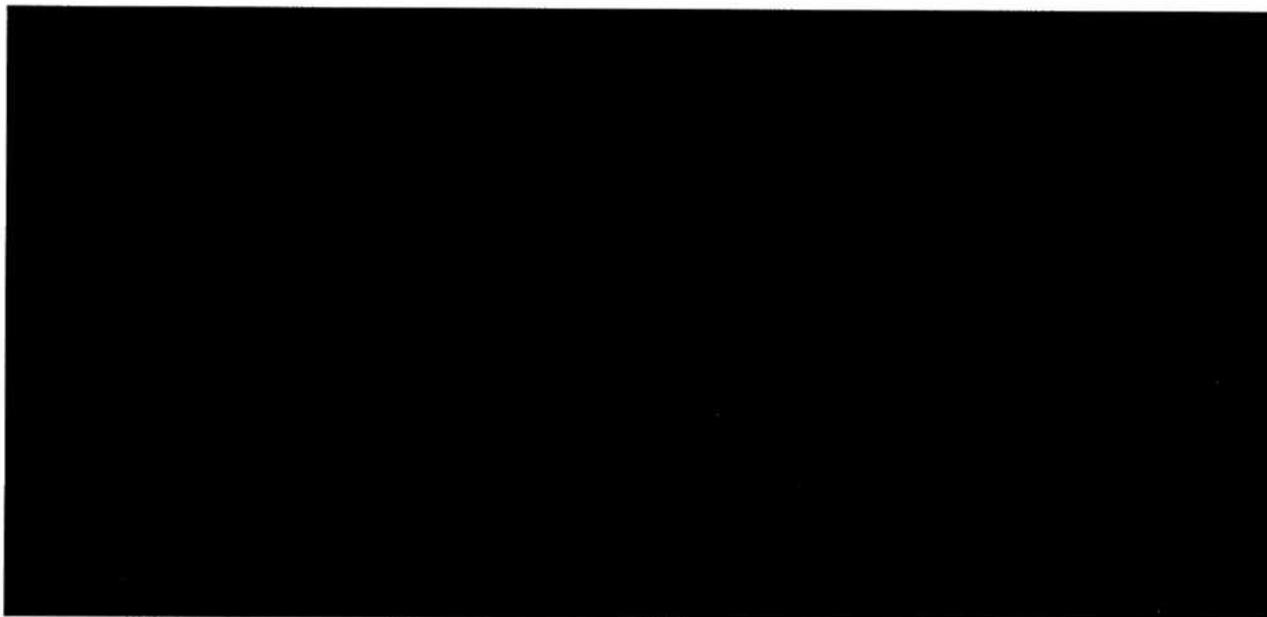
**Request No. 19:** *Provide Mercedes' assessment of the subject component failure experience in the peer vehicles, including:*

- a. The causal or contributory factors, including but not limited to misfuel and fuel quality concerns;*
- b. The approximate percentages of subject component failures associated with each of the causal/contributory factors identified in item "a;"*
- c. The failure mechanism for each causal condition identified;*
- d. The failure mode for each causal condition identified, including the effect on engine performance (e.g., driveability concern, engine stall); and*
- e. A comparison, by model and model year, of the HPFP warranty claim rates and part sales rates in the peer vehicles and HPFP failure rates for same/similar vehicles in other worldwide markets (e.g., Germany, France, United Kingdom, Russia, China, India, Japan, Brazil, and Canada). [Please note any differences between vehicle designs and market fuel distribution/quality that Mercedes believes may affect this analysis].*

**Response to Request No. 19:**







Should you have any questions, please do not hesitate to contact Mr. R. Thomas Brunner at [brunnert@mbusa.com](mailto:brunnert@mbusa.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'Frank J. Diertl', is written over a set of horizontal lines.

Frank J. Diertl  
General Manager,  
Engineering Services

A handwritten signature in black ink, appearing to read 'R. Thomas Brunner', is written over a set of horizontal lines.

R. Thomas Brunner  
Department Manager,  
Vehicle Compliance and Analysis