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VOLKSWAGEN
GROUP OF AMERICA

Scott Yon
Chief, Vehicle Integrity Division
Office of Defects Investigation
U.S. Department of Transportation
National Highway Traffic Safety Administration
1200 New Jersey Avenue S.E.
Washington, DC 20590

CHRISTOPHER T. SANDVIG NAME
GM – COMPLIANCE / TREAD TITLE
PRODUCT COMPLIANCE DEPARTMENT
248-754-5000 PHONE
248-754-5093 FAX
OCTOBER 01, 2010 DATE

Subject: PE10-027 NVS-212cag

Dear Mr. Yon:

VOLKSWAGEN GROUP OF AMERICA, INC
3800 HAMLIN ROAD
AUBURN HILLS, MI 48326
PHONE +1 248 754 5000

Please find attached Volkswagen's response to your letter dated August 06, 2010 requesting information concerning vehicle fires that originate in the engine compartment area, including those that may be related to faulty ignition coils, on certain 2002-2003 MY and 2006-2007 MY Volkswagen Passat vehicles.

Thank you for your consideration in granting our requested extension to October 01, 2010.

To ensure clarity in the presentation of information included in this response, Volkswagen understands the "alleged defect" to refer to vehicles that experienced actual engine compartment or complete vehicle fires that were characterized by actual flame and combustion damage, as opposed to "non-fire" thermal events resulting in damage limited to the subject component and associated wiring or adjacent parts ("component overheating"). However, in response to your information request Volkswagen is providing information with respect to both types of incidents.

For your convenience, each request is restated verbatim and then followed by our response.

Please contact me if you have any questions regarding this response.

Sincerely,

Christopher T. Sandvig
General Manager - Compliance/TREAD
Service and Quality

Attachments

Request 1

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

a) Vehicle's identification number (VIN);
b) Model Year;
c) Vehicle's date of manufacture;
d) Date warranty coverage commenced;
e) The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease);
f) Engine displacement;
g) Number of engine cylinders;
h) Type of aspiration (normal, turbo, etc.);
i) Ignition coil configuration (i.e. pencil coil, coil pack, etc);
j) Original equipment coil manufacturer/supplier name;
k) Whether or not the vehicle is subject to NHTSA safety recall 08V-156;
l) If affected by 08V-156, the date the recall was completed, or "n/a" if not completed;
m) Whether or not the vehicle is subject to an EPA mandated emissions recall involving the ignition coil(s); and,
n) If affected by an emissions recall, the date the recall was completed, or "n/a" if not completed.

Response 1

In response to your inquiry, Volkswagen has identified the following number of 2002-2003 Model Year (MY) and 2006-2007 MY Passat vehicles manufactured and sold to Volkswagen Group of America, Inc. for resale or lease in the United States that were equipped with the "coil pack" and "pencil coils":

Subject Vehicles	MY 2002	MY 2003	MY 2006	MY 2007
[1]Passat	93,836	105,230	63,016	39,872

Please see Microsoft Excel file entitled "PRODUCTION DATA.xlsx" for responses to subparagraphs "a" through "n" attached hereto as Exhibit to Request 1.

During the period of time in question, Volkswagen used two different kinds of ignition coils. So-called "coil packs" were installed in 2002-2003 MY vehicles equipped with V6 engines. All other gasoline engines were equipped with "pencil type" ignition coils ("pencil coils").

The manufacturer of "coil pack" type ignition coils installed in 2002-2003 MY V6 Passat vehicles was Bremi Auto-Electric Ernst Bremicker GmbH ("Bremi").

Pencil coils installed in subject vehicles were sourced from Bremi Auto-Electric Ernst Bremicker GmbH ("Bremi"), Era PowerTrain GmbH ("Era"), Pulse GmbH & Co. KG ("Pulse"), and Eldor Corporation S.P.A. ("Eldor").

Eldor and Pulse are the current suppliers of pencil coils.

The manufacturer of the coils originally installed in some of the vehicles listed has been identified as "Eldor", "Pulse" or "Bremi" in the Exhibit to this request. Production constraints made a second supplier necessary. Thus Eldor and Pulse supplied the pencil coils installed on some of the subject vehicles. Because those pencil coils are interchangeable, the identity of the specific supplier of coils installed on certain vehicles was not documented by VIN. For those the Table shows "Eldor or Pulse."

Volkswagen notes that neither the Environmental Protection Agency ("EPA") nor the California Air Resources Board ("CARB") mandated any emissions recall related to ignition coils on the subject vehicles, nor on any other Volkswagen or Audi vehicle. The "P1 / 28F3" emission service action, involving the replacement of pencil coils, is a voluntary emission service action undertaken in coordination with EPA and CARB.

NHTSA was informed about this voluntary emission service action with email dated Nov 18, 2009. Volkswagen is including a copy of documents relating to this voluntary emissions service action as an Exhibit to Request 7 for the Agency's review.

[1]Production count for model years 2002-2003 and 2006 Passat vehicles sold or leased in Puerto Rico are not included, as these model year vehicles were not imported and sold by Volkswagen Group of America Inc.

Source: Business Objects Vehicles Universe Date Gathered: Through the date of the inquiry

Exhibit to Request 1

Please see data provided in Microsoft Excel format in the
Exhibit to Request 1 folder on the PE10-027 Data Collection Disc

Request 2

State the number of each of the following, received by VW, or of which VW 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 and employee field reports;
c) Reports involving a crash, injury, burn injury, or fatality, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;
d) Property damage claims; and,
e) Third-party arbitration proceedings where VW is or was a party to the arbitration; and
f) Lawsuits, both pending and closed, in which VW is or was a defendant or codefendant.

For subparts "a" through "e," 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 "g," provide a summary description of the alleged problem and causal and contributing factors and mfg's short name's 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.

Response 2

Volkswagen submits that the definition of the alleged defect is very broad because it includes the many under hood systems and components within the engine compartment. In response, Volkswagen has conducted a broad and thorough review of its records, in relation to the concerns raised by NHTSA and produces the requested information herein, as described below.

Volkswagen evaluated all records which met the TREAD definition of "fire." Volkswagen notes however that the parameters of TREAD reportable events constitute an expansive universe from which relevant cases must be identified. Records were therefore manually screened to identify those which met the alleged defect in subject vehicles.

In response to your inquiry with respect to the alleged defect, Volkswagen has identified 25 unique incidents related to pencil coils. No incidents involving coil packs were identified. An additional 21 unique incidents involving 15 different systems/components in the engine compartment other than ignition coils were identified. Volkswagen's analysis identified 37 unique incidents which were inconclusive inasmuch as the cause could not be determined.

A number of other incidents were reviewed that either did not contain sufficient information to permit a determination as to whether the incidents fell within the definition of "alleged defect" or

that analysis showed the incident to be attributable to non-fire thermal events. These reports are nevertheless provided for the Agency's review.

Volkswagen notes that the following responses to the different subparts below include multiple reporting about the same underlying incident; these counts may not be added together because a false total count would result.

a) In response to your inquiry, Volkswagen has identified 21 consumer complaints involving pencil coils related to the alleged defect in the subject vehicles. Volkswagen has not identified any consumer complaints related to the alleged defect and referring to coil packs. Volkswagen has identified 20 consumer complaints involving 15 different systems/components in the engine compartment other than ignition coils, which relate to the alleged defect in the subject vehicles. Volkswagen has identified 20 consumer complaints which were inconclusive inasmuch as the cause related to the alleged defect in the subject vehicles could not be determined.

A number of consumer complaints were reviewed that did not contain sufficient information to permit a determination as to whether the incident fell within the definition of "alleged defect" or that analysis showed the incident to be attributable to non-fire thermal events. These consumer complaints are nevertheless provided for the Agency's review.

b) In response to your inquiry, Volkswagen has identified 21 field reports involving pencil coils related to the alleged defect in the subject vehicles. Volkswagen has not identified any field reports related to the alleged defect and referring to coil packs. Volkswagen has identified 16 field reports involving 10 different systems/components in the engine compartment other than ignition coils, which relate to the alleged defect in the subject vehicles. Volkswagen has identified 20 field reports which were inconclusive inasmuch as the cause related to the alleged defect in the subject vehicles could not be determined.

A number of field reports were reviewed that did not contain sufficient information to permit a determination as to whether the incident fell within the definition of "alleged defect" or that analysis showed the incident to be attributable to non-fire thermal events. These field reports are nevertheless provided for the Agency's review.

c) In response to your inquiry, Volkswagen notes it has not received any reports involving a crash, burn or other injury, or notices/claims of injury or death alleging or proving that a death or injury was caused by the alleged defect in the subject vehicles. Volkswagen has also not received any property damage claims, consumer complaints, or field reports involving or referring to crash, burn or other injury related to the alleged defect in the subject vehicles.

d) In response to your inquiry, Volkswagen has not identified any property damage claims involving pencil coils related to the alleged defect in the subject vehicles. Volkswagen has not identified any property damage claims related to the alleged defect and referring to coil packs. Volkswagen has identified 4 property damage claims involving 2 different systems/components in the engine compartment other than ignition coils, which relate to the alleged defect in the subject vehicles. Volkswagen has identified 2 property damage claims which were inconclusive inasmuch as the cause related to the alleged defect in the subject vehicles could not be determined. Volkswagen notes that 1 property damage claim is duplicative of a VOQ provided. All of the property damage claims are duplicative of either a consumer complaint, or both a consumer complaint and a field report.

A number of property damage claims were reviewed that did not contain sufficient information to permit a determination as to whether the incident fell within the definition of "alleged defect" or that analysis showed the incident to be attributable to non-fire thermal events. These claims are nevertheless provided for the Agency's review.

Volkswagen provides a summary for related property damage claims in an Adobe Acrobat file entitled "Attachment 02-01.pdf" attached hereto as Exhibit to Request 2.

e) In response to your inquiry, Volkswagen has identified 8 subrogation claims involving pencil coils related to the alleged defect in the subject vehicles. Volkswagen has not identified any subrogation claims related to the alleged defect and referring to coil packs. Volkswagen has identified 8 subrogation claims involving 6 different systems/components in the engine compartment other than ignition coils, which relate to the alleged defect in the subject vehicles. Volkswagen has identified 8 subrogation claims which were inconclusive inasmuch as the cause related to the alleged defect in the subject vehicles could not be determined.

Volkswagen has not attempted to summarize the subrogation claims, as all claims are duplicative of a consumer complaint, field report, warranty claim and/or a property damage claim. Volkswagen has identified all records associated with a subrogation claim in the Microsoft Excel files attached hereto as Exhibit to Request 4.

f) In response to your inquiry, Volkswagen has identified 3 lawsuits, in which Volkswagen is or was a defendant or codefendant. These suits which are either pending or closed, involve 3 unique vehicles and relate to the alleged defect in the subject vehicles but do not allege ignition coils as cause of the underlying incident. All of the lawsuit claims are duplicative of a consumer complaint, a field report, and/or a property damage claim.

Volkswagen provides a summary for related lawsuits in an Adobe Acrobat file entitled "Attachment 02-02.pdf"attached hereto as Exhibit to Request 2.

Source: TREAD repository

Date Gathered: Through the date of the inquiry

Exhibit to Request 2

Please see data provided in Adobe Acrobat format in the Exhibit to Request 2 folder on the PE10-027 Data Collection Disc

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) VW'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's owner or fleet name (and fleet contact person), address, and telephone number;
d) Vehicle's VIN;
e) Vehicle's model year;
f) Number of cylinders;
g) Ignition coil configuration (i.e. pencil coil, coil pack, etc);
h) Original equipment coil supplier;
i) Vehicle's date of manufacture;
j) Vehicle's mileage at time of incident;
k) Incident date;
l) Report or claim date;
m) Whether a crash is alleged;
n) Whether the vehicle was re-purchased by VW due to allegations of a fire; and,
o) Number of alleged injuries, including burn injuries, if any.

Provide this information in Microsoft Access 2000, or a compatible format, entitled "COMPLAINT DATA".

Response 3

In response to your inquiry, Volkswagen is providing copies of documents identified as "relates to the alleged defect" for subparagraphs "a" through "o" in a Microsoft Excel file entitled "COMPLAINT DATA_RELATED.xlsx" attached hereto as Exhibit to Request 3. The records are organized in ascending order by file ID number.

In response to your inquiry, Volkswagen is providing copies of documents identified as "may relate to the alleged defect" for subparagraphs "a" through "o" in a Microsoft Excel file entitled "COMPLAINT DATA_MAY RELATE.xlsx" attached hereto as Exhibit to Request 3. The records are organized in ascending order by file ID number.

In response to your inquiry, Volkswagen is providing copies of documents identified as "not able to determine" for subparagraphs "a" through "o" in a Microsoft Excel file entitled "COMPLAINT DATA_UNDETERMINED.xlsx" attached hereto as Exhibit to Request 3. The records are organized in ascending order by file ID number.

Source, Date Gathered: See Response Two

Exhibit to Request 3

Please see data provided in Microsoft Excel format in the Exhibit to Request 3 folder on the PE10-027 Data Collection Disc

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 VW used for organizing the documents.

Response 4

Volkswagen notes that some of the information contained in the materials provided may be considered personal / private by the individuals concerned.

In response to your inquiry, Volkswagen is providing copies of documents identified as "relates to the alleged defect" for each item in Response 2. The documents are in an Adobe Acrobat file entitled "REQUEST NUMBER FOUR DATA_RELATED.pdf" attached hereto as Exhibit to Request 4. The records are organized in ascending order by file ID number.

In response to your inquiry, Volkswagen is providing copies of documents identified as "may relate to the alleged defect" for each item in Response 2. The documents are in an Adobe Acrobat file entitled "REQUEST NUMBER FOUR DATA_MAY RELATE.pdf" attached hereto as Exhibit to Request 4. The records are organized in ascending order by file ID number.

In response to your inquiry, Volkswagen is also providing documents identified as "not able to determine" for each item in Response 2. The documents are in an Adobe Acrobat file entitled "REQUEST NUMBER FOUR DATA_UNDETERMINED.pdf" attached hereto as Exhibit to Request 4. The records are organized in ascending order by file ID number.

Source, Date Gathered: See Response Two

Exhibit to Request 4

Please see data provided in Adobe Acrobat format in the Exhibit to Request 4 folder on the PE10-027 Data Collection Disc

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 VW 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:

g) VW's claim number;
h) Vehicle's owner or fleet name (and fleet contact person) and telephone number;
i) Vehicle's identification number (VIN);
j) Model year;
k) Vehicle's date of manufacture;
l) Number of engine cylinders;
m) Ignition coil configuration (i.e. pencil coil, coil pack, etc);
n) Engine displacement;
o) Type of aspiration (normal, turbo, etc.);
p) Repair date;
q) Vehicle's mileage at time of repair;
r) Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
s) Labor operation number;
t) Problem code;
u) Replacement part number(s) and description(s);
v) Whether the vehicle was re-purchased by VW due to allegations of a fire;
w) Concern stated by customer; and,
x) Comment, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2000, or a compatible format, entitled "WARRANTY DATA."

Response 5:

In response to your inquiry, Volkswagen has identified 10 paid warranty claims, involving pencil coils related to the alleged defect in the subject vehicles. Volkswagen has not identified any warranty claims related to the alleged defect and referring to coil packs. Volkswagen has identified 7 paid warranty claims, involving 6 different systems/components in the engine compartment other than ignition coils, which relate to the alleged defect in the subject vehicles. Volkswagen has identified 17 paid warranty claims that were inconclusive inasmuch as the cause related to the alleged defect in the subject vehicles could not be determined.

A number of warranty claims were reviewed that did not contain sufficient information to permit a determination to be made as to whether the incidents fell within the definition of "alleged defect." Volkswagen is also providing these documents for the Agency's review.

In response to your inquiry, Volkswagen is providing copies of documents identified as "relates to the alleged defect" for each item in Response 5. The documents are in a Microsoft Excel file format, entitled "WARRANTY DATA_RELATED.xlsx" attached hereto as Exhibit to Request 5. The claims are organized in ascending order by claim ID number.

In response to your inquiry, Volkswagen is providing copies of documents identified as "may relate to the alleged defect" for each item in Response 5. The documents are in a Microsoft Excel file format, entitled "WARRANTY DATA _MAY RELATE.xlsx" attached hereto as Exhibit to Request 5. The claims are organized in ascending order by claim ID number.

In response to your inquiry, Volkswagen is also providing documents identified as "not able to determine" for each item in Response 5. The documents are in a Microsoft Excel file format, entitled "WARRANTY DATA _UNDETERMINED.xlsx" attached hereto as Exhibit to Request 5. The claims are organized in ascending order by claim ID number.

Source: TREAD repository

Date Gathered: Through the date of the inquiry

Exhibit to Request 5

Please see data provided in Microsoft Excel format in the Exhibit to Request 5 folder on the PE10-027 Data Collection Disc

Request 6

Describe in detail the search criteria used by VW to identify the claims identified in response to Request No. 5, including the labor operations, problem 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 applicable to the alleged defect in the subject vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by VW 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 VW 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.

Response 6

In order to respond to your inquiry, the following search criteria were used to search the TREAD repository to identify warranty claims in response to Request 5:

- All 2002, 2003, 2006, and 2007 MY Volkswagen Passat vehicles equipped with coil pack or pencil coils, manufactured and sold to Volkswagen Group of America, Inc. for resale or lease in the United States

- All TREAD repository warranty claims categorized under TREAD Category 23 – Fire

The individual warranty claims were then manually screened to identify those which reported fires originating in the engine compartment, including, but not limited to, alleged faulty ignition coils.

The following is a list, by model year and model, of the terms of the New Vehicle Limited Warranty coverage offered by Volkswagen on the subject vehicles:

2002	Passat : 4 Years / 50,000 miles	Bumper to Bumper
2003	Passat : 4 Years / 50,000 miles	Bumper to Bumper
2006	Passat : 4 Years / 50,000 miles	Bumper to Bumper
2007	Passat : 4 Years / 50,000 miles	Bumper to Bumper
2002	Passat : 5 Years / 60,000 miles	Powertrain Limited Warranty
2003	Passat : 5 Years / 60,000 miles	Powertrain Limited Warranty
2006	Passat : 5 Years / 60,000 miles	Powertrain Limited Warranty
2007	Passat : 5 Years / 60,000 miles	Powertrain Limited Warranty

Volkswagen does not offer an extended warranty on the subject vehicles related to the alleged defect.

Source: VWGoA

Date Gathered: Through the date of the inquiry

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 VW 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. Include any such documents related to EPA mandated emissions recalls, or any related Service Action Circulars (service campaigns or VW petitions), either of which involve the ignition coils used in the subject vehicles. Also include the latest draft copy of any communication that VW is planning to issue within the next 120 days. For each such action, provide a list of the VW vehicles affected and provide the following information:

a) Vehicle's make;
b) Vehicle's model;
c) Vehicle's model year;
d) Number of engine cylinders; and,
e) Ignition coil configuration.

Response 7

Volkswagen notes that the subject vehicles are not involved in any EPA mandated emissions recall.

Volkswagen is providing documents related to the voluntary emissions service actions and related Service Action Circulars, each of which involve pencil coils used in the subject vehicles, but which are not related to the alleged defect. Volkswagen is also providing materials presented to EPA and CARB in connection with the voluntary service actions that were also previously provided to NHTSA.

Volkswagen also provides documents related to the safety recall R5. Please note that only the under hood "fuel line" portion of the recall may relate to the alleged defect.

A table outlining each item in "a" through "e" is being provided in a an Adobe Acrobat file format, entitled "REQUEST NUMBER SEVEN DATA.pdf" attached hereto as Exhibit to Request 7.

Volkswagen provides copy of the requested documents in an Adobe Acrobat file format, in a folder entitled "REQUEST NUMBER SEVEN DATA" attached hereto as Exhibit to Request 7.

Source: VWGoA

Date Gathered: Through the date of the inquiry

Exhibit to Request 7

Please see data provided in Adobe Acrobat format in the Exhibit to Request 7 folder on the PE10-027 Data Collection Disc

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, VW. 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.

Response 8

Volkswagen has identified 3 reports that relate to or may relate to the alleged defect in the subject vehicles.

In addition, Volkswagen is including 4 internal inquiries/communications that relate to, or may relate to, the alleged defect in the subject vehicles. Those inquiries relate to the customer complaints identified in response to Request No. 2. Volkswagen is providing copy of all documents for the Agency's review.

A table outlining each item in "a" through "f" is provided in an Adobe Acrobat file format entitled "REQUEST NUMBER EIGHT DATA.pdf" attached hereto as Exhibit to Request 8.

Volkswagen provides copy of the requested documents in an Adobe Acrobat file format, in a folder entitled "REQUEST NUMBER EIGHT DATA" attached hereto as Exhibit to Request 8.

Exhibit to Request 8

Please see data provided in Adobe Acrobat format in Exhibit to Request 8 folder on the PE10-027 Data Collection Disc

Request 9

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 other VW or Audi vehicles that use the same or substantially similar coils, that have been conducted, are being conducted, are planned, or are being planned by, or for, VW. For each such action, provide the following information:

Action title or identifier;

a) The actual or planned start date;
b) The actual or expected end date;
c) Brief summary of the subject and objective of the action;
d) Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and,
e) 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.

Response 9

Per a discussion with Ms. Cynthia Glass of NHTSA on August 17, 2010 with respect to the scope of Request 9, it was agreed that Volkswagen would provide its response to address the alleged defect in 2004-2010 MY Volkswagen and Audi vehicles.

Volkswagen understands this request for "assessments, analysis, tests, test results, et al" that relate to, or may relate to, the alleged defect, extends beyond an observation of a component by field personnel. The answer to this request therefore does not include Field Reports associated with "other VW or Audi vehicles that use the same or substantially similar coils."

Volkswagen submits that the definition of the alleged defect is very broad, including all of the many systems and components within the engine compartment. The request further expands the inquiry to include all 2004-2010 MY Volkswagen and Audi vehicles manufactured that use the same or substantially similar coils. Volkswagen understands that NHTSA is focusing on ignition coils and accordingly has attached the analysis reports that relate to, or may relate to ignition coil issues in all other 2004-2010 MY Volkswagen or Audi vehicles manufactured for sale or lease in the United States that use the same or substantially similar coils.

A table outlining each item in "a" through "e" is provided in an Adobe Acrobat file format entitled "REQUEST NUMBER NINE DATA.pdf" attached hereto as Exhibit to Request 9.

Volkswagen provides copy of the requested documents in an Adobe Acrobat file format, in a folder entitled "REQUEST NUMBER NINE DATA" attached hereto as Exhibit to Request 9.

Volkswagen notes that the following abbreviations are used in some of the reports in Exhibit to Response 9:

EOS - Electrical OverStress
PCB - Printed Circuit Board
IGBT - Insulated Gate Bipolar Transistor

Exhibit to Request 9

Please see data provided in Adobe Acrobat format in the Exhibit to Request 9 folder on the PE10-027 Data Collection Disc

Request 10

Discuss whether or not the subject vehicle's engine management system[1] has the capability to detect an engine misfire (i.e., a loss of ignition to one of more spark plugs), and if so, the method used to detect misfire and its detection sensitivity (how "capable" the system is at detecting misfire). State any potential impact(s) an engine misfire may have on the catalytic converter, and discuss specifically any impacts misfire has on the catalyst's exterior surface temperature. Discuss and explain any steps the engine management system takes once a misfire is detected, including driver warning and fault code storage, and any countermeasure(s) the system can implement to protect or otherwise mitigate catalytic converter damage and/or overheating. Discuss any applicable Federal or State regulations related to engine misfire detection and potential countermeasures for the subject vehicles, including any citations the regulations are identified by.

Response 10

In response to your inquiry, Volkswagen is providing the following summaries to address the items requested in Request 10 under request for confidentiality. Additional information, charts, tables, and regulatory information are clearly identified within the Attachment list, hereto as Exhibit to Request 10.

Engine Management System Misfire Detection Capability

Attachment 10-01 for the Passat B5 generation and Attachment 10-02 for the Passat B6 generation explain in detail how misfire is detected. These documents are standard references or General Descriptions for the EPA and part of the On-Board Diagnostics (OBD) description.

Attachment 10-03 provides an overview of the different ignition systems in the subject vehicles and their respective parameters. These values represent the thresholds (the sensitivity) of the system. If these values are exceeded countermeasures (deactivation of the respective cylinder) are triggered. Please note that certain dynamic ranges are specified, the higher the current engine's load, the lower are thresholds. Depending on engine load, vehicle speed and other conditions the ECU determines when measures must be taken. Volkswagen notes that there is no regulation or other requirement to implement cylinder deactivation as a reaction to misfire.

The V6 engine (development during the mid-1990s) and the 1.8T engine (development in the late-1990s) are engine concepts that detect misfires but are not able to initiate internal countermeasures (cylinder deactivation). The engine management system does inform and alert the driver about the abnormal condition by illumination of the Malfunction Indicator Lamp ("MIL"). The owner's manual provides information on necessary driver's reaction required to help prevent catalytic converter damage.

[1] The engine management system is the system that controls, among many other functions, engine fueling and ignition. It typically includes an electronic control unit that has diagnostic capability for the purposes of emission system and electronic component failures.

During the analyses conducted for EA07-027 it was determined that misfires in the V6 engine would not create exhaust system surface temperatures that could reach excessively high temperatures at the heat shields - regardless of the driving cycle. For misfires in the 1.8T engine, driving cycles were detected in which excessively high temperatures could be reached (resulting in smoke and/or odor), creating the need to implement a cylinder deactivation strategy. Accordingly the 1.8T engine management system was updated in the R5 recall (NHTSA safety recall 08V-156) to also include cylinder deactivation capability.

In general two misfire conditions can be identified: Emission-relevant misfires and those that can damage the catalytic converter. Both conditions will trigger the respective fault codes as described in the General Description documents.

An emission-relevant misfire condition will continuously illuminate the MIL. A misfire condition that could damage the catalytic converter will cause the MIL to flash.

In either case the owner's manual instructs the driver to "continue driving **with reduced power** and have the cause **corrected right away**," see Attachment 10-04.

A misfire (loss of ignition) condition will cause unburned fuel to enter the exhaust system unless the engine management system triggers countermeasures (cylinder deactivation).

Unburned fuel will be "ignited" downstream in the catalytic converter causing heat to be released over and above that normally transmitted with the exhaust gas. Thus the internal temperature of the catalytic converter will rise and the surface temperature will also increase accordingly. This can occur in both the V6 engine and 1.8T engine (prior to the R5 recall software update), because the engine control unit is not able to trigger countermeasures (cylinder deactivation).

Attachment 10-05 shows the effect of misfires for vehicles with the V6 engine for different driving cycles, starting at 50 mph. The exhaust system of the V6 engine contains two catalytic converters (pre-converters) in the engine compartment (one for each cylinder bank) and another two under the vehicle body.

As long as the driver heeds the instructions in the owner's manual and drives with reduced power, the excess temperature will not reach levels that cause damage to the catalytic converter.

However, if these instructions are not followed and driver does not drive with reduced engine power (as shown in the diagram), the converter can ultimately be damaged.

The other engines/engine management systems on the subject vehicles (W8, VR6, 2L TFSI and 1.8T after the R5 recall) can detect misfires and deactivate the misfiring cylinder by cutting off fuel injection in that specific cylinder.

Attachment 10-06 shows the effect of misfires with and without cylinder deactivation, illustrated using the 1.8T engine as the example.

The converter on the 1.8T engine corresponds to the position of the pre-converter on the V6, but the smaller engine does not have a secondary underbody converter. Deactivation of the misfiring cylinder will not allow exhaust temperatures to rise above normal operation temperatures, on the contrary, deactivation limits temperatures to levels below normal operation (because there now is one cylinder less generating exhaust gas).

Regardless of the engine's ability to initiate countermeasures, the warning strategy and instructions to the driver remain the same.

Volkswagen provides copy of the regulatory requirements as Attachment 10-07. Volkswagen notes that the content of these requirements corresponds to the General Descriptions provided as Attachments 10-01 and 10-02. The requirement is limited to misfire detection and fault code storage accompanied by MIL illumination. Volkswagen notes further that the implementation of a cylinder deactivating functionality clearly exceeds all applicable requirements. The regulation would not even require the MIL to flash when cylinder deactivation occurs.

Exhibit to Request 10

Please see data provided in an Adobe Acrobat format in the Exhibit to Request 10 folder on the PE10-027 Data Collection Disc

Request 11

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

f) The causal or contributory factor(s);
g) The failure mechanism(s);
h) The failure mode(s);
i) The effectiveness of safety recall 08V-156;
j) The risk to motor vehicle safety that it poses;
k) 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
l) The reports included with this inquiry.

Response 11

Volkswagen has conducted a broad, thorough and detailed review of its technical and service records related to the concerns raised by NHTSA and concludes that, when separated from the engine compartment matters not associated with ignition coils, at issue are only a small number of relevant incidents that are *de minimis* and do not constitute a risk to motor vehicle safety. In addition, Volkswagen did not identify any injuries, fatalities or accidents that can be attributed to the alleged defect in general, or to the failure of an ignition coil in any of the more than 300,000 subject vehicles that have been in service for up to 9 years. Volkswagen shares NHTSA's concerns with engine fire and takes very seriously all questions and issues related to the safety of its customers. As the submitted records and detailed reports of incidents show, however, the ignition coils used by Volkswagen in 2002, 2003, 2006 and 2007 MY Passats, as well as other vehicles in the Volkswagen fleet, are a safe and effective technology.

While NHTSA has requested, and Volkswagen has provided, documents and information related to the broad matter of "engine compartment fires" in the subject vehicles, the core focus, we understand, is pencil coils. Coil packs, the ignition coil technology installed in 2002-2003 MY subject vehicles equipped with V6 engines, Volkswagen notes, are not associated in our records with any failures that can be related to the alleged defect.

As such, Volkswagen believes that it is important to understand, and put into context, the purpose and history of pencil coils used by Volkswagen.

Background and Prior Actions

Pencil coils allow leaner, cleaner, and more powerful combustion through a higher electrical charge to spark plugs. This permits effective use of different engine concepts, such as FSI and gasoline turbo, and allows Volkswagen to produce more fuel efficient vehicles, characterized by lower emissions, to meet today's stringent environmental standards. While Volkswagen is not the only manufacturer that employs this technology, the level of voltage and associated performance that Volkswagen's technology offers is unique. Volkswagen engines using these pencil coils can better adapt to operating conditions, offer precise control of ignition timing and enable the ignition of a leaner fuel mixture and lower emissions.

Early in the deployment of this technology in Volkswagen's engines, however, it became apparent that the parts would not offer the requisite consistency and reliability over time and did not provide sufficient resistance to moisture ingress. As a result, customers complained of MIL warning lamp illumination, rough engine performance and reduced engine power. Inspection of removed parts showed an insufficient sealing and resistance to moisture ingress, especially when the engine was cleaned with a high-pressure power washer. In those cases, corrosion or moisture ingress could cause electrical shorts on the printed circuit board of pencil coils leading to malfunction. In almost every case, this led to a simple failure of the part and caused the rough running engine and other comfort issues experienced by customers. In rare cases, internal electrical components failed and caused the component to overheat and produce localized damage.

The pencil coils use an electronic switch (IGBT) to control the flow of electrical current. For any electronic element a certain number of failing circuits in the parts per million-range ("ppm") is unavoidable, eventually leading to failure of the element and possibly overheating of component, especially when considering high current switching electronics. As long as only the component overheats, the consequence would be performance issues, MIL warning lamp illumination, and a possibility of smell noticeable to the customer. Such component problems, however, do not pose a risk, as the vehicle remains safe and controllable and the driver is immediately alerted about the malfunction by the MIL warning lamp (as also illustrated by some of the VOQs provided). As discussed in greater detail below, this localized overheating of the component within the engine compartment has never risen to the level of a safety concern.

Given the pencil coil's integral relationship to engine emissions, these failures led Volkswagen to undertake two voluntary emission service actions with the approval of and in coordination with the EPA and CARB. In 2003, Volkswagen conducted the "WG" service action to replace the original pencil coils. By October 2009, when these too did not perform as designed, Volkswagen decided to undertake service action "P1" to update all vehicles to the current pencil coils. In each instance, NHTSA was informed of these actions and provided with copies of the communications by Volkswagen.

Aside from the emission issues, ignition coil technology was also involved in NHTSA PE07-024 that led to the installation of additional exhaust system shielding to supplement the original shielding that was found to be deteriorating in use. It is important to note that this concern, addressed in the 08V-156 ("R5") safety recall, was limited to exhaust system fires at the undercarriage (outside of the engine compartment).

The R5 safety recall, initiated in the fall of 2008, successfully addressed the potential risk of fire caused by heat shield deterioration and possible fuel line fracture on 1.8T vehicles. Indeed, Volkswagen is not aware of any incidents of fire in the relevant vehicles where the recall campaign had been performed. As noted above, there were fires in vehicles before the recall or in instances where the owner did not respond to the recall notices.

Performance issues, emissions action and perhaps their association with the R5 "heat shield" safety recall in 2008, appeared to have created a sense that pencil coils were a "problem part." Even among dealers, the replacement of pencil coils became the quick and easy 'fix' for too

many engine performance issues. Analysis of warranty returns showed that in up to 90% of these cases, coils actually proved to be functional although replaced under warranty to remedy performance issues including misfire conditions. It appears that the customer's problem was attributed to an alleged pencil coil failure without proper diagnosis and actually was not the cause of the customer's concern. (See pie charts provided as Attachments 11-01 (generated from Attachment 09-40)).

In almost every case, pencil coil issues have led to a simple failure of the part and caused the rough running engine and other comfort issues experienced by customers. In rare cases, internal electrical components failed and caused the component to overheat and produce localized damage. There the consequences would also create noticeable performance issues, MIL warning lamp illumination, but in some cases could also include smoke and smell noticeable to the customer. All such component problems, however, do not pose a safety risk, as the vehicle remains safe and controllable and the driver is immediately alerted about the malfunction by reduced performance as well as MIL warning lamp illumination (as also illustrated by some of the VOQs provided). Volkswagen submits that when considering the small number of fires attributable to pencil coils, and understanding the background and prior actions associated with these parts, there is no concern related to or affecting motor vehicle safety.

Vehicle Owner Questionnaires

Volkswagen has analyzed the vehicle owner questionnaires (VOQs) provided in this investigation and believes that these do not demonstrate that a safety defect exists. The assessment summaries for the VOQs follow NHTSA's categorization.

MY 2002 and 2003 Passat Fires That May Be Related to Faulty Ignition Coils

VOQ 10323939: Records do not refer to any fire but only complaints about pencil coil failure. The vehicle's history does not show any pencil coil replacement until the end of the warranty period in April 2008. Volkswagen has no records of service after the warranty period.

VOQ 10302338: Records reference an engine compartment fire but offer no connection to a pencil coil failure. The customer never contacted Volkswagen so there is no other information about this case.

VOQ 10304571: The vehicle fire occurred because of an improperly installed aftermarket battery. The battery retainer was missing in the engine compartment permitting the aftermarket battery to move and chafe the attached wiring, leading to an electrical fire. The reported property damage consisted of subsequent smoke damage to the customer's house. The complete loss of the house, however, is apparently attributable to a later fire caused during repair of the smoke damage. Volkswagen notes that this VOQ is duplicative of one field report and one denied property damage claim.

VOQs 10293321, 10327020, 10313156, 10275878: Each vehicle was subject to the heat shield campaign yet had not responded to the recall notifications. In one instance, the campaign had been open on the vehicle for two years.

VOQ 10283274: Records show the customer saw the "Check Engine" lamp but ignored the warning and continued to drive the vehicle. While parking, the customer noted smoke coming from the vehicle but instead of leaving the vehicle and calling for assistance or taking other appropriate measures, he restarted the car and drove to a service station. The vehicle was claimed to be a total loss at 95,000 miles – although service records show the P1 action was later performed on the car at 106,000 miles. This later service suggests the "total loss" claimed was likely only localized and repairable component overheating.

VOQ 10285807: Service records show that the customer was reimbursed twice for problems with pencil coils despite the fact that they were not installed by an authorized dealership. Accordingly, Volkswagen is unaware of the replacement parts used, but suspect that the fire incident was caused by aftermarket pencil coils installed during the repairs by the independent workshop.

VOQ 10263560: An independent service station repaired the vehicle and the customer was reimbursed. No analysis of the subject part was performed. Available records appear to refer to localized component overheating only, showing damage to wiring/connector directly attached to the pencil coil.

MY 2002 and 2003 Passat Ignition Coil Failure, No Fire

VOQ 10298990: This VOQ involves a customer's complaint about a component issue and the denial of service under the P1 service action. As noted above, the V6 coil pack in the subject vehicle is a different technology than the pencil coils addressed in the P1 service action and thus not included.

VOQ 10305187: This VOQ concerns a complaint about a partial denial of reimbursement. The reimbursement covered the pencil coils but not the unassociated parts included in the request. The voluntary emissions service action offers reimbursement for previously replaced pencil coils.

VOQs 10262591, 10253800, 10318922: These VOQs concern performance complaints alleged to have been associated with faulty pencil coils. These complaints are addressed, however, in the voluntary P1 emissions service action.

VOQ 10284308: This VOQ concerns a customer's claim for reimbursement for pencil coil replacement performed by her boyfriend to a nine year old vehicle with approximately 100,000 miles. Volkswagen Customer Care declined the request and recommended the customer seek qualified assistance from an authorized workshop.

MY 2006 and 2007 Passat Fires That May Be Related to Faulty Ignition Coils

VOQ 10290841: This VOQ alleges a cracked coil pack caught fire, although the subject vehicle would have actually been equipped with pencil coils. The attached wiring was also reported to have been damaged, suggesting that it was a pencil coil component overheating.

VOQ 10290099: The vehicle history shows several pencil coil replacements apparently related to performance issues. The repair history shows multiple repair attempts to resolve the customer's problem, but we have no record about the cause identified. The repeated repair suggests, however, that the pencil coils were not the root cause of the reported performance issues. The third repair references "melted coils" that suggests overheating although it is clear that the subject part was not the original factory installed coil.

MY 2006 and 2007 Passat Ignition Coil Failure, No Fire

VOQ 10316077: This VOQ concerns a pencil coil repair that did not resolve the customer's complaints, although subsequent repairs to other aspects of the vehicle ultimately concluded the matter. This suggests that the pencil coil was not the cause of the problem but perhaps the initial "easy fix."

VOQ 10335221: This VOQ relates to performance issues and "check engine" illumination only that were resolved by pencil coil replacement. Such complaints are addressed, however, in the voluntary P1 emissions service action.

Volkswagen submits that these VOQs more accurately represent concerns about performance issues rather than any defect related to motor vehicle safety.

Relevant Incidents as Found in VOQ, Warranty, Customer, Field, and Property Damage Records

Volkswagen has undertaken an exhaustive search and analysis of data related to the concerns raised by NHTSA.

Volkswagen has identified 25 instances of engine compartment fire related to pencil coils within the total population of 232,799 vehicles that are subject to this investigation. This is *de minimis* and does not constitute an unreasonable risk to motor vehicle safety.

Volkswagen identified the 25 instances cited above by focusing on the instances of fire caused by ignition coils within the broad definition of events called for in NHTSA's information request. To identify these incidents for consideration and detailed analysis, Volkswagen first screened all "fire" incidents as reported under the TREAD requirements meeting the broad TREAD definition of "fire." Volkswagen consolidated for the purpose of identifying individual incidents duplicate occurrences within the VOQ, warranty, consumer, field and property damage information.

Volkswagen identified a small number of incidents associated with components other than ignition coils that also do not present safety concern. These have been provided for NHTSA's review but have not been discussed in detail in this response because they were isolated single incidents which do not present any noticeable trend or pattern.

From the large volume of information provided to NHTSA, Volkswagen's analysis narrowed the relevant number of incidents to 25, by setting aside a number of categories of unrelated matters such as:

Battery / Battery Cables: Volkswagen found 8 unique incidents related to the battery area or battery cables. It appeared that in the majority of these cases, aftermarket installations or workshop error caused the customer concerns. Out of those single incidents no failure mechanism or root cause could be established. For example, one vehicle (also referenced in VOQ 10304571) actually caught fire because an aftermarket battery was installed and the battery hold down was not mounted. The battery was able to move and chafed the wiring. Please refer to the VINs:

WVWAK73C07P[redacted], WVWPD63B03P[redacted], WVWPD63B43E[redacted] WVWRH63B53P[redacted]
WVWRH63B93P[redacted] WVWVU73C57E[redacted], WVWVU93C37[redacted], WVWUK63B23[redacted]

Aftermarket Coils: Volkswagen analyzed several aftermarket pencil coils that were purchased new from a number of aftermarket automotive retailers in the US (please refer to actions 09-42 and 09-43 described above in response to Request No. 9). Neither the packaging nor the pencil coils themselves identified the manufacturer. The analysis determined these aftermarket coils did not provide enough spark energy to ensure proper ignition (or to meet emission requirements). Some aftermarket coils did not have a shut-down function and would overheat and burn when continuously subjected to normal operating voltage. Finally, some aftermarket coils evidenced an unsafe assembly process and were for example missing essential internal components, such as permanent magnets. Given that the coils were made to appear identical to Volkswagen OEM parts (please refer to Attachment 11-02), Volkswagen cannot estimate how many fire cases reported in this response might actually have been caused by such aftermarket parts.

Aftermarket Installations: In at least 8 incidents, vehicle inspection revealed the cause of the fire to be aftermarket installations, including batteries, xenon headlights, and radio power supplies. These aftermarket installations showed a high tendency to cause excessive damage, such as the consumption of the whole engine compartment or even a total loss and property damage. Please refer to the VINs:

WVWAK73C46P[redacted], WVWMD63B73P[redacted], WVWPD63B92P[redacted], WVWPD63B92P[redacted]
WVWRH63B53P[redacted], WVWTH63B82P[redacted] WVWWH63B72E[redacted], WVWZK63B93E[redacted]

Outside Influence: Volkswagen found that 9 under hood fires that were caused by outside influences such as rodent damage, debris, workshop error or even the result of accident damage. Please also refer to VINs:

WVWAK73C07P[redacted] WVWAK73CX[redacted], WVWEK93C16P[redacted] WVWMD63B23P[redacted]
WVWPD63B33P[redacted] WVWPD63BX[redacted], WVWRH63B23P[redacted] WVWRH63BX2P[redacted]
WVWUK63B23P[redacted]

Fuel Line: Volkswagen found that 4 incidents originated at the fuel lines inside the engine compartment of 2002-2003 MY 1.8T Passats. The subject vehicles were part of the R5 recall and, again, in each instance, it was identified that the recall had not been completed prior to the incident. Please also refer to VINs:

WVWPD63B03P[redacted] WVWPD63B43P[redacted], WVWPD63B72P[redacted], WVWUK63B23P[redacted]

Reports Provided with Response

Volkswagen submits with this response 41 analysis reports from the Volkswagen quality laboratory, or from a respective part supplier. These analyses deal with reported failures of ignition coils in the subject and the other 2004-2010 MY vehicles. The reports demonstrate that, in rare cases, ignition coils may overheat and damage the attached wiring and, on occasion, the design hood above the engine. In isolated cases extensive damage to the vehicle was observed. Through these single incidents, however, Volkswagen could not establish a trend or to determine that a risk to motor vehicle safety exists.

Volkswagen also notes that the majority of ordinary warranty parts removed because of an alleged ignition coil failure, actually proved to be fully functional. In those cases, the coils were not the cause of the customers' concern. (See Attachment 09-40 & 09-41).

Motor Vehicle Safety

The pencil coils in the subject vehicles do not constitute an unreasonable risk to highway safety. The 25 engine compartment fires related to pencil coils, characterized by actual flame and combustion damage, must be considered not only in light of the vehicle population of 232,799 and average age of the subject vehicles of 6.63[2] years, but also the absence of any reported loss of vehicle control, collisions, injuries or fatalities. Further, none of the other, non-coil related incidents that meet the definition of alleged defect, involved any personal injury or fatality. Most importantly, in those engine or vehicle fire incidents that can be attributed to pencil coils, the driver was adequately alerted that the vehicle was not operating properly.

The failure or overheating of a coil would immediately result in an electrical failure inside the component. This condition leads to performance issues that make themselves known to the

[2] For model years 2002 to 2003, the mean production date is May 2002, equating to 8.4 years. For model years 2006 to 2007, the mean production date is May 2006, equating to 4.4 years. Taking account of the fact that the older vehicles represent a larger number, the average age is 6.63 years.

driver through rough running, reduced engine power and immediate illumination of warning lamps in the instrument cluster. If these conditions are ignored and overheating of the coil should persist, a burning odor and ultimately smoke will be noticeable to those inside and outside the vehicle. All of these conditions provide a series of escalating warnings to the driver and passengers, providing adequate time to react.

Volkswagen did not just rely on VOQs and the reports received from customers and dealers in investigating NHTSA's concerns. We also searched the Fatal Accident Reporting System (FARS) and the National Automotive Sampling System, Crashworthiness Data System (NASS/CDS) to determine whether any cases had been reported in those systems that are not contained in our company records. Both FARS and NASS/CDS did not return any fatalities, crashes or fires that can be related to the alleged defect.

To further place the identified incidents related to the alleged defect into a larger context, Volkswagen also undertook a comparative analysis using the benchmark values developed in "U.S. Vehicle Fire Trends and Patterns," NFPA by Marty Ahrens (2003-2007). This comprehensive study concerned only instances involving the dispatch of fire responders. Therefore we concluded that mere component overheating – which we do not understand to meet the definition of the alleged defect – would rarely result in fire department involvement.

As provided in Table 2.9 (see attachment 11-03) of that study, from 2003 through 2007, U.S. fire departments responded to an average of 267,600 vehicle fires per year – of which about 23% (61,500) were attributed to "electrical failure or malfunction." Volkswagen believes that it may be useful in an evaluation of the presence of an unreasonable risk to highway safety to consider this in the context of reported incidents related to pencil coil malfunction.

Given the average annual registration for all light vehicles in the U.S. of 223,765,588[3], the **annual** rate of fires caused by electrical failures or malfunction is (61,500 / 223,765,588) = 0.275 r/1000 or 275 per million vehicles registered.

The 25 incidents of engine compartment fire related to pencil coils and reported in this response represent a rate of 0.107 r/1000 or 107 ppm for the 232,799 subject vehicles equipped with pencil coils. As noted above, the vehicles are in service for 6.63 years to date, equating to an annual rate of about 0.016 r/1000 or 16 ppm. This compares with the average of 0.275 r/1000 or 275 ppm per year resulting from the Ahrens study. The rate associated with pencil coils is therefore about 17 times lower than the average rate of electrical fires for the automotive industry. Volkswagen believes this analysis provides additional confirmation that the reported incidents involving the subject vehicles do not constitute an unreasonable risk to motor vehicle safety.

[3] R.L. Polk & Co. registration data

Furthermore, Volkswagen notes that in PE09-032, NHTSA investigated engine compartment fires originating at or near the ignition coils in certain vehicles from another manufacturer. In that case, NHTSA closed the investigation that was characterized by a significantly higher incident rate than that associated with the subject Volkswagen vehicles. While the problems there appeared to manifest themselves early in the life of the component, the fact remains that the components remain in service and presumably similar such technology is deployed in other vehicles. The incident rate in our inquiry is far below the values in that matter.

Summary

In the event of any pencil coil failure, as discussed above, the most important fact is that the vehicle remains safe and controllable, and the driver and passengers are immediately alerted to a pencil coil malfunction through rough running, reduced engine power and illumination of the MIL warning lamp in the instrument cluster.

Based on the *de minimis* incident rate identified in response to this inquiry, the analyses conducted, and the complete lack of any crashes, injuries or fatalities, Volkswagen has not identified any unreasonable risk to motor vehicle safety related to the alleged defect in the subject vehicles.

Exhibit to Request 11

Please see data provided in an Adobe Acrobat format in the Exhibit to Request 11 folder on the PE10-027 Data Collection Disc