

# DAIMLERCHRYSLER

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*9/19/05*

2005 SEP 13 A 5:01 DaimlerChrysler Corporation

September 9, 2005

OFFICE OF THE  
DIRECTOR

Stephan J. Speth  
Director  
Vehicle Compliance & Safety Affairs

Mr. Jeffrey L. Quandt  
Office of Defects Investigation  
National Highway Traffic Safety Administration  
U.S. Department of Transportation  
400 Seventh Street, SW  
Washington, D.C. 20590

Dear Mr. Quandt:

Reference: NVS-213cla; PE05-036

This document contains DaimlerChrysler Corporation's ("DCC") response to the referenced inquiry regarding 1999-2000 model year Chrysler Cirrus, Dodge Stratus and Plymouth Breeze (JA) vehicles that have been manufactured for sale or lease in the United States. By providing the information contained herein, DCC is not waiving its claim to attorney work product and attorney-client privileged communications.

Many of the subject vehicle fires analyzed during this investigation involved significant destruction of the engine compartment, thus impeding DCC's efforts to make a definitive cause and origin determination based upon physical evidence. Accordingly, statements of eyewitness, usually the driver, were most helpful in reaching a conclusion as to how the fires possibly occurred in the subject vehicles. The vast majority of these eyewitness accounts contain two common elements: 1) a report that the vehicle was operated for an extended period of time, stopped, the engine was shut off and the occupant(s) exited, and 2) within one to several minutes after shutting the vehicle off, evidence of a fire was observed coming from beneath the hood in the area of the engine compartment. These statements, the available reports from post-fire examinations and DCC's understanding of fire ignition and propagation in motor vehicles leads to the postulate that the majority of the fires in the subject vehicles likely resulted from the hot surface ignition of petroleum-based fluid vapors that were trapped in the engine compartment once the vehicle was shut off and air flow ceased. Petroleum based fluids can include engine oil, transmission fluid, power steering fluid and brake fluid.

For reason stated in detail in the assessment, DCC does not believe that any significant number of the fire reports reviewed in response to this inquiry were of an electrical or gasoline origin.

Possible sources of the petroleum-based fluid leakage have yet to be determined. DCC's investigation to date has revealed that the 2.4L engine (sales code EDZ) appears to be a common denominator in the majority of the reports. In addition, there is virtually no field input prior to 40 months in service. Moreover, many of the alleged fires involved high mileage vehicles, many beyond 100,000 miles.

To better understand the potential cause and scope of the issue, DCC is currently conducting a survey to determine whether there is any evidence of petroleum-based fluid leakage in high mileage 2.4L engine equipped JA vehicles. DCC will submit its findings to the Agency when the survey is complete and the results analyzed.

Sincerely,

  
Stephan J. Speth

Attachment and Enclosures

1. State, by model, engine, and model year, the number of subject vehicles DaimlerChrysler has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by DaimlerChrysler, state the following:
  - a. Vehicle Identification number (VIN);
  - b. Make;
  - c. Model;
  - d. Engine;
  - e. Model Year;
  - f. Date of manufacture;
  - g. Date warranty coverage commenced; and
  - h. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2000, or a compatible format, entitled "PRODUCTION DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

Note: Provided data responsive to all questions is through July 28, 2005.

Vehicle Type	1999 MY	2000 MY	Total
Chrysler Cirrus	32,979	46,896	79,875
Dodge Stratus	84,749	119,092	203,841
Plymouth Breeze	56,121	15,724	71,845
Total Vehicle Volume = 355,561			

- A1. The chart above lists all 1999-2000 model year Chrysler Cirrus, Dodge Stratus and Plymouth Breeze (designated "JA" body style) vehicles that have been manufactured by DaimlerChrysler Corporation ("DCC") for sale or lease in the United States.

The detailed response listing the production data as requested in items a. through h. is provided in Enclosure 1 as a Microsoft Access 2000 table, titled "PRODUCTION DATA".

2. State the number of each of the following, received by DaimlerChrysler, or of which DaimlerChrysler is otherwise aware, which relate to, or may relate to: (1) the alleged defect; (2) power steering fluid leakage; or (3) leakage from underhood fuel system components in the subject vehicles:

- a. Consumer complaints, including those from fleet operators;
- b. Field reports, including dealer field reports;
- c. Reports involving a crash, injury, or fatality, 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 subject vehicle, property damage claims, consumer complaints, or field reports;
- d. Property damage claims; and
- e. Third-party arbitration proceedings where DaimlerChrysler is or was a party to the arbitration; and
- f. Lawsuits, both pending and closed, in which DaimlerChrysler 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 "f," provide a summary description of the alleged problem and causal and contributing factors and DaimlerChrysler's assessment of the problem, with a summary of the significant underlying facts and evidence. For item 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.

- A2. The following summarizes the non-privileged reports received by DCC that relate to, or may relate to, the alleged condition in the subject vehicles. DCC has conducted a reasonable and diligent search of our records kept in the ordinary course of business for such information.
- a. There are a total of 93 complaints that may relate to the alleged condition, based on text, pictures and fire analysis reports that exist in the DCC Customer Assistance Inquiry Request ("CAIR") database. 11 of these complaints are duplicative of VOQs provided by NHTSA.
  - b. There is one field report (no inputs received from fleet operators) that may relate to the alleged condition, based on text and pictures in the report.
  - c. There is one legal claim that alleges injury and none that allege crash or fatality. The one injury alleged difficulty breathing for approximately six weeks after the alleged fire, but an examination found the claimant's lungs

"clear" with "full expansion bilaterally." DCC requested additional information regarding the incident, the alleged causes and nature of claimant's injuries, and repair history of the vehicle, but received no written response or telephone contact. The statute of limitations expired without further activity by claimant.

- d. There are no reports of alleged property damage that are responsive to this inquiry. For purposes of this response, "property damage" is defined as any non-vehicle component that was allegedly damaged during the reported incident.
- e. There are no third-party arbitration proceedings where DCC is, or was, a party to the arbitration, that is responsive to this inquiry.
- f. There are 69 legal claims and eight lawsuits involving DCC with allegation of vehicle fire which may be responsive to this investigation.

To facilitate a complete answer to Question 10 a. without unnecessary redundancy, DCC has appended an extra field to the database containing the response information for Question 2, which describes the assessment of the cause of each fire. The legend utilized consists of letters A-E with a description following each letter.

In summary there are 93 CAIRs, one field report, and 77 legal claims/lawsuits received through July 26, 2005 that may be related to the subject condition, for which there are 146 unique vehicles.

Subject Vehicle Population = 355,661				
Category Description	CAIR	Field Reports	Claims/Lawsuits	VOQs
A) Underhood fire- no identified cause	63	0	29	0
B) Underhood fire- likely fluid on manifold	30	0	40	11
C) Underhood fire- possible electrical origin	0	0	6	0
D) Insufficient information to categorize	0	1	0	15
E) Not related	0	0	2	2

**Total unique vehicles involved from all data sources = 146**

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. DaimlerChrysler's file number or other identifier used;
  - b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
  - c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
  - d. Vehicle's VIN;
  - e. Vehicle's make, model, engine and model year;
  - f. Vehicle's mileage at time of incident;
  - g. Incident date;
  - h. Report or claim date;
  - i. Whether a crash is alleged;
  - j. Whether a fire is alleged;
  - k. Whether property damage is alleged;
  - l. Number of alleged injuries, if any; and
  - m. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2000, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

- A3. The information requested in items a. through m. is provided in the detailed response to Question No. 2, Enclosure 2, as part of a Microsoft Access 2000 table, titled "REQUEST NUMBER TWO DATA."
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 DaimlerChrysler used for organizing the documents.
- A4. Copies of all documents within the scope of Question No. 2 are provided in Enclosure 3, titled "CUSTOMER COMPLAINTS, FIELD REPORTS, LEGAL CLAIMS and LAWSUITS."
5. State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by DaimlerChrysler to date that relate to, or may relate to, incidents of power steering fluid leakage or underhood fuel system leakage 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 any technical service bulletin or customer satisfaction campaign.

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

- a. DaimlerChrysler's 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. Whether there is a coincident claim for towing (within one week of the claim relating to the alleged defect);
- k. Concern stated by customer; and
- l. 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." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

- A5. There are no applicable Labor Operation codes that apply to any type of vehicle fire. Fires are reported through the DaimlerChrysler Customer Assistance Center ("DCCAC") and are logged as a Customer Assistance Inquiry Request ("CAIR"). There are 22 Labor Operations that may apply to underhood fluid leakage. The first chart below pertains to power steering fluid leakage and the second chart pertains to fuel leakage. The claims by vehicle count for the 1999-2000 model year JA vehicles manufactured for sale or lease in the U.S. are shown in the charts below.

Power Steering Fluid Leakage Claims by Labor Operation Code and Model Year

Labor Operation	1999 MY	2000 MY	Total
19-00-01-05	440	378	818
19-40-25-01	7	3	10
19-50-10-38	0	29	29
19-50-10-11	150	158	308
19-50-15-11	0	0	0

19-50-16-36	0	0	0
19-50-17-11	5	17	22
19-50-17-12	11	29	40
19-50-17-39	0	0	0
19-50-20-11	0	0	0
19-70-01-10	0	0	0
19-70-01-11	56	101	157
19-70-01-12	76	134	210
19-70-55-09	16	54	70
19-70-55-12	77	49	126

**Underhood Fuel Leakage Claims by Labor Operation Code and Model Year**

Labor Operation	1999 MY	2000 MY	Total
14-30-20-01	51	47	98
14-30-20-02	0	0	0
14-30-20-04	115	189	304
14-70-05-02	11	1	12
14-70-10-01	91	88	179
14-70-14-03	3	8	11
14-70-14-04	5	2	7

DCC's warranty system is designed to compensate dealers for repairs made and cannot be reliably used to determine any trend related to the alleged condition. It is not possible to determine the reason for each particular warranty claim. There may be other random issues that are not related to the alleged condition, yet may still trigger replacement of the subject components.

The detailed response that lists the warranty claims as requested in items a. through i. is provided in Enclosure 4 as a Microsoft Access 2000 table, titled "WARRANTY DATA".

6. Describe in detail the search criteria used by DaimlerChrysler 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 DaimlerChrysler 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



**DaimlerChrysler 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.**

A6. The search criteria used by DCC to identify claims for Question No. 5 can be found in the chart below:

**Description of Labor Operation Codes pertaining to power steering fluid leakage:**

Labor Operation	Description
19-00-01-05	Gear Assembly, Power Steering, Replace
19-40-25-01	Solenoid Control Valve, Replace, Speed Pro Steering
19-70-55-12	Reservoir, Power Steering Pump, Replace - 2.5L Engine
19-50-10-38	Hose Pump Pressure, Replace - 2.0L / 2.4L Engine
19-50-10-11	Hose, Pump Pressure, Replace
19-50-15-11	Hose Pump / Reservoir Return, Replace - All Engines
19-50-15-38	Hose Pump / Reservoir Return, Replace - 2.0L Engine
19-50-17-11	Hose Pump Supply, Replace - 2.5L Engine
19-50-17-12	Hose Pump Supply, Replace - 2.4L Engine
19-50-17-39	Hose Pump Supply, Replace- 2.0 Engine
19-50-20-01	Cooler, Power Steering Oil, Replace
19-70-01-10	Pump, Power Steering Pressure, Replace - 2.0L Engine
19-70-01-11	Pump, Power Steering Pressure, Replace - 2.5L Engine
19-70-01-12	Pump, Power Steering Pressure, Replace -2.4L Engine
19-70-55-09	Reservoir, Power Steering Pump, Replace -2.0L / 2.4L Engine

**Failure Codes pertaining to power steering system fluid leakage:**

Failure Code	Description
UC	Uncodeable
E1	Housing Leaks
X2	Split, Cut or Torn
11	Broken or Cracked
62	Line/Fitting leak
71	Oil Leak

**Power steering system fluid leakage warranty counts by Failure Code:**

Failure Code	1999 MY	2000 MY	Total
UC	176	158	334
E1	159	212	371
X2	6	30	36
11	7	18	25
62	23	48	71
71	402	466	868

**Description of Labor Operation codes pertaining to underhood fuel leakage:**

Labor Operation	Description
14-30-20-01	Injector Replace, one or all, Incl. O ring seal - 2.0L / 2.4L Engines
14-30-20-02	Injector Replace, one or all, Incl. O ring seal - 2.0L DOHC Engines
14-30-20-04	Injector Replace, one or all, Incl. O ring seal - 2.5L Engines
14-70-05-02	Hose, Fuel Flex, Replace
14-70-10-01	Line / Tube, Fuel Replace
14-70-14-03	Rail, Fuel Injector, Replace - 2.5L Engines
14-70-14-04	Rail, Fuel Injector, Replace - 2.0L / 2.4L Engines

**Failure Codes pertaining to fuel system leakage:**

Failure Code	Description
UC	Uncodeable
X2	Split, Cut or Torn
11	Broken or Cracked
43	Fuel Leak
65	Leaks

**Fuel system leakage warranty counts by Failure Code:**

Failure Code	1999 MY	2000 MY	Total
UC	57	87	144
X2	9	1	10
11	18	33	51
43	182	214	396
65	0	0	0

The standard warranty offered on the 1999-2000 model year JA vehicles that were manufactured for sale or lease in the United States was 3 years / 36,000 miles. There were no extended warranty coverage options that related specifically to the subject components. Owners may have purchased additional warranty coverage through third-party providers not affiliated with DCC. This warranty data is not available to DCC and is not included in this response.

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 DaimlerChrysler has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities. This includes, but is not limited to, bulletins, advisories, informational documents, training documents, or other documents or communications, with the exception of standard shop manuals. Also include the latest draft copy of any communication that DaimlerChrysler is planning to issue within the next 120 days.

- A7. DCC is not aware of any documents that have been issued that relate to the alleged defect in the subject vehicles. The following Technical Service Bulletin ("TSB") describes a change in recommended power steering fluid usage on the subject vehicles. This document is located in Enclosure 5 and is summarized briefly below:

Technical Service Bulletin # 19-06-98 was issued October 2, 1998 and related to a change in power steering fluid from MS 5931 to MS 9933. The MS 9933 fluid has better operational characteristics at hot and cold temperatures and also retains its characteristics longer than the MS 5931 fluid.

DCC has no plans to issue any service, warranty, or other documents or communications that relate to, or may relate to, the alleged defect in the subject vehicles in the next 120 days.

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

- A8. On February 20, 2003, DCC opened an internal investigation to evaluate reports of JA underhood fire in vehicles from Puerto Rico, primarily from the 1995-1997 model years. A brief description of the internal investigation and DCC's reasons for investigation closure follows. Field input analyzed as part of the investigation is attached in Enclosure #7. Documents denoting analysis, testing and survey work completed during

the investigation are being submitted in Enclosure 6 – Confidential - Testing Documentation (CD-Rom) to Ms. Jacqueline Glassman, Office of the Chief Counsel, under separate cover with a request for confidential treatment of information.

DCC eventually became aware of 10 vehicles in this market that had experienced underhood engine fires. The investigation showed that at least some of the reported incidences appeared to be related to fluid leakage from the power steering pressure hose. DCC Engineering personnel traveled to Puerto Rico after it became obvious that this was a unique operating environment that was not fully understood. From the investigation the following was established:

- Vehicles in Puerto Rico traffic operated in an extreme temperature environment that likely exists in only isolated areas of the world.
- Thermo-couple data acquired from testing in extreme heat duty cycles intended to simulate the Puerto Rico environment indicated that at times a short portion of the power steering pressure hose near the cylinder head could be exposed to temperatures near the maximum specified continual exposure temperature outlined in the hose material specification.
- Two Puerto Rico vehicle hoses returned for analysis had evidence of heat aging which resulted in degradation of the inner liner and eventual leak through the outer wrap.
- The majority of vehicles identified with this condition had very high mileage, upwards of 100,000 miles or more.
- Results of a 12 vehicle survey completed in the US in 2003 indicated that high mileage hoses in the US market were not experiencing degradation similar to that witnessed in the Puerto Rico returns.
- An additional four hoses were returned for analysis from vehicles on long term test at DCC's Arizona Proving Grounds. These vehicles were part of a long term paint durability fleet, and were operated regularly in extreme temperatures. The hoses had between 60,000-70,000 vehicle miles when removed. Analysis found both hoses to be in good condition, with no signs of heat induced degradation.
- Further, a search of underhood fire complaints known to DCC at the time outside of Puerto Rico showed only a small number in the 1995-1998 model years. Analysis of these complaints established that only 1 of these reports was potentially related to a hot surface ignition event such as power steering fluid being ignited from a manifold.
- Several of the inspectors hired by DCC to review fire complaint vehicles in Puerto Rico submitted photographs of power steering fluid containers inside vehicle passenger and trunk compartments, indicating that a leak had been present for some time and had not

been addressed, but rather additional power steering fluid was being added.

- As a corrective action, DCC released a new service power steering pressure hose manufactured from a new rubber material (HNBR) that was better suited to the higher temperature environment.

Based on no trend of input anywhere in the world beyond Puerto Rico, the age and mileage of the vehicles involved, the appearance of knowledge by the operator that a power steering fluid leak existed and the extreme operating conditions required to induce the condition, DCC closed the investigation in September of 2004.

DCC is currently in the process of conducting a survey of approximately 20 1998-2000 model year JA vehicles to assess the overall integrity of the power steering system, fuel system and major underhood electrical systems in high mileage vehicles. An update will be submitted to NHTSA when the survey is complete.

DCC has repurchased a customer vehicle that allegedly experienced the subject condition. The vehicle arrived at DCC on September 6, 2005 and engineering analysis of this vehicle will follow. DCC will provide NHTSA with analysis of this vehicle when complete.

9. Furnish top, front, and side view diagrams showing the layout and relative positioning of the components in each version of the following systems used in the subject vehicles and state the usage of each by model, engine, and model year: (a) power steering; (2) underhood fuel delivery; (c) exhaust; and (d) electrical distribution system. Show each diagram within a shell of the vehicle body and engine compartment. Show items "a" through "c" together and item "d" in separate diagrams.
- A9. Three files (Enclosure 8) are provided to document the 2.0 / 2.4 / 2.5L engine packages (note: the 2.0 / 2.4L packages are identical):
- a. Power Steering System
  - b. Underhood Fuel Delivery System
  - c. Exhaust System
  - d. Electrical Distribution System

Each is shown with the shell of the vehicle body and engine compartment. Items a. through c. are shown together. Per agreement on September 6, 2005 with NHTSA investigator Chris Lash, item a. for the 2.5L engine is excerpted from the JA Service Manual detailing the routing of the power

steering hoses on the 2.0 / 2.4L and 2.5L engines. Computer models of the 2.5L engine do not exist in DCC's database, as this engine was purchased from Mitsubishi Motors Corporation. Item d. is provided as three separate graphics taken from the JA Service Manual. The electrical distribution system is the same for each vehicle variation regardless of the powertrain.

**10. Furnish DaimlerChrysler's assessment of the alleged defect in the subject vehicles, including:**

- a. A list of all of the fire incidents with the following information for each: model, engine, model year, VIN, owner name, city, state, incident date and mileage, the alleged cause of the fire, and DaimlerChrysler's assessment of the cause of the fire;**
- b. The frequencies of the underhood fires in the subject vehicles by model, engine, and model year;**
- c. The trends of underhood fires in the subject vehicles by model, engine, and model year – i.e., the changes in the underhood fire incident rates in the various populations over time-in-service using months-in-service as the age parameter; and**
- d. The primary cause(s) of the underhood fire experience and trends in the subject vehicle population - state both fuel source(s) and ignition source(s).**

**A10. a. The requested information has been provided with the response to Question 2.**

- b. The frequency of underhood fires by model, engine and model year in the subject vehicles is provided in Enclosure 9.**
- c. The trend of underhood fires by model, engine and model year in the subject vehicles plotted by months-in-service is provided in Enclosure 10.**
- d. It is well known that the cause and origin of a vehicle fire is often indeterminate when the physical evidence has been destroyed in the fire. In the absence of physical evidence, a cause and origin determination often relies, either solely or in part, upon the statements of eyewitnesses to the vehicle fire. This is precisely what DCC has encountered during this investigation.**

Many of the subject vehicle fires analyzed during this investigation involved significant destruction of the engine compartment, thus impeding DCC's efforts to make a definitive cause and origin determination based upon physical evidence. Accordingly, statements of eyewitness, usually the driver, were most helpful in reaching a conclusion as to how the fires

possibly occurred in the subject vehicles. The vast majority of these eyewitness accounts contain two common elements: 1) a report that the vehicle was operated for an extended period of time, stopped, the engine was shut off and the occupant(s) exited, and 2) within one to several minutes after shutting the vehicle off, evidence of a fire was observed coming from beneath the hood in the area of the engine compartment. These statements, the available reports from post-fire examinations and DCC's understanding of fire ignition and propagation in motor vehicles leads to the postulate that the majority of the fires in the subject vehicles likely resulted from the hot surface ignition of petroleum-based fluid vapors that were trapped in the engine compartment once the vehicle was shut off and air flow ceased. Petroleum based fluids can include engine oil, transmission fluid, power steering fluid and brake fluid.

DCC is aware that some of the reports being submitted indicate a preliminary belief by the field investigator that the fire was attributed to an electrical cause. However, upon further review of these reports, DCC finds no factual basis for these preliminary conclusions. It is DCC's experience that independent investigators may sometimes mistakenly conclude that an electrical malfunction is the source of an ignition in the absence of a more apparent ignition source. Wiring in a motor vehicle is made of copper. Copper melts at approximately 2,000 degrees F and vehicle fires typically achieve only 1,500 -1,800 degrees F. Since vehicle fires do not generate high enough temperatures to melt copper, evidence of electrical shorts resulting from melted insulation may lead less experienced investigators to list an electrical short as the probable cause of the fire.

Moreover, DCC does not believe that the subject vehicle fires were caused by underhood fuel leakage in combination with a hot surface ignition in the engine compartment. This belief is based on the fact that hot surface ignition of fuel vapors, which requires 1,550 degrees F, is extremely difficult to achieve in an underhood environment during normal operation of the vehicle. In addition, gasoline fueled fires are usually preceded by the driver's statement that fuel odors had been detected for some time prior to the fire, which was not the case in the reviewed reports responsive to this inquiry. It is possible for the human olfactory system to detect fuel odors in as small a quantity as 200 parts per million ("ppm"), which is too lean to support gasoline combustion. Combustion requires approximately 14,000 ppm. The customer will nearly always smell fuel long before it is present in a sufficient quantity to ignite.

Unlike gasoline vapors, hot surface ignition of most petroleum-based fluid vapors requires temperatures of approximately 800 degrees F. Petroleum-

based fluids must first evaporate in order to be combustible. Once evaporation occurs, the vapors must collect near an ignition source. The temperature of a vehicle's exhaust manifold after a short period of driving is not enough to act as an ignition source if a sufficient volume of vapors accumulate. Also, unlike gasoline vapors, vapors from evaporated petroleum-based fluids are heavy and do not quickly move away from potential ignition sources on the lower portion of the engine. Vapors will rarely, if ever, ignite if there is sufficient airflow through the engine compartment, as the vapors do not have a chance to settle on the heat source. It is typically when the engine is off, and the airflow around the engine ceases, that vapors can begin to collect in proximity to the hot surfaces and ignition may occur.

As previously noted, the eyewitness descriptions of the majority of the subject vehicle fires indicate that the alleged fires occurred after the vehicle was stopped for a minute to several minutes after driving. It is possible, therefore, that petroleum-based fluids leaked, vaporized and became trapped within the engine compartment after the vehicle was parked. With no vapor evacuation, the hot surface of the underhood exhaust components may have ignited the vapors, resulting in a fire.

Possible sources of the petroleum-based fluid leakage have yet to be determined. DCC's investigation to date has revealed that the 2.4L engine (sales code EDZ) appears to be a common denominator in the majority of the reports. Moreover, many of the alleged fires involved high mileage vehicles, many beyond 100,000 miles. Based on the absence of field input during DCC's prior investigation of underhood fires on 1995-1998 model year JA vehicles in Puerto Rico, and the continuing lack of field input on these model years today, it also appears that the current condition is isolated to the 1999-2000 model year vehicles, for reasons that are not understood at this time.

To better understand the potential cause and scope of the issue, DCC is currently conducting a survey to determine whether there is any evidence of petroleum-based fluid leakage in high mileage 2.4L engine equipped JA vehicles. DCC will submit its findings to NHTSA when the survey is complete and results analyzed.