DAIMLERCHRYSLER

DaimlerChrysler Corporation
Stephan J. Speth
Director
Vehicle Compliance & Safety Affairs

July 22, 2004

Ms. Kathleen C. DeMeter, Director
Office of Defects Investigation
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Ms. DeMeter:

Reference: NVS-213bby; EA03-012

This document completes DaimlerChrysler Corporation's ("DCC's") response to the referenced inquiry dated May 26, 2004 regarding information concerning brake tube experience on 1995 through 1999 DCC LH-platform (Chrysler LHS, Concorde, 300M, New Yorker, Dodge Intrepid, and Eagle Vision) vehicles.

DCC's review of complaints, warranty claims, and parts demand has not identified any issue with the brake tube routing or performance characteristics from the subject vehicles. The absence of these issues can be attributed to the design philosophy and adherence to stringent design standards, combined with comprehensive vehicle testing program whereby vehicles undergo hundreds of thousands of miles of durability testing in a variety of environmental conditions prior to vehicle volume production. DCC has received no substantiated complaints relating to rear brake tube fluid leakage resulting from abrasion or corrosion, and only a very small number of complaints relating to tube abrasion or corrosion resulting from contact with moving components. This very small number of complaints comes from a population of over 1.2 million of the subject peer vehicles, and most of those complaints can be attributed to wear consistent with vehicles that have been in service between 5 and 10 years.

In summary, DCC's review of this information has identified no indication of any brake tube routing or performance issue with the subject peer vehicles.

Sincerely,

Stephan J. Speth

Attachments and Enclosures

DaimlerChrysler Corporation
800 Chrysler Drive CIMS 482-00-91
Auburn Hills MI USA 48326-2757

Q1. State, by model, model year, and brake system (ABS or non-ABS) the number of subject peer vehicles DaimlerChrysler has manufactured for sale or lease in the United States. Separately, for each subject peer vehicle manufactured to date by DaimlerChrysler, state the following:

a. Vehicle identification number (VIN);
b. Make;
c. Model;
d. Brake system;
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 information for this request in a Microsoft Access 2000 table format (or a compatible format). Entitle the table "PRODUCTION DATA." See Enclosure 1, Data Collection Disk, for a pre-formatted table that provides further details regarding this submission.

A1. Enclosure 1 (CD-rom) contains the requested vehicle volume information provided in the Microsoft Access 2000 format. There were 1,214,224 of the subject vehicles manufactured for sale or lease in the United States for the 1995-1999 model years. There were 775,756 of the subject peer vehicles manufactured for sale or lease in the United States for the 1995-1997 model years, and there were 438,468 of the subject peer vehicles manufactured for sale or lease in the United States for the 1998-1999 model years. Although many of the specifications remained the same for the subject components, there were several routing and design changes made when the "LH" platform was revised in the 1998 Model Year.

Q2. State, by model and model year, the number of each of the following, received by DaimlerChrysler, or of which DaimlerChrysler is otherwise aware, which relate to, or may relate to, the subject condition in the subject peer 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 the subject condition in a subject peer vehicle, property damage claims, consumer complaints, or field reports;
d. Third-party arbitration proceedings where DaimlerChrysler is or was a party to the arbitration; and,
e. 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 "e," 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 items "d" and "e", 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.

In accordance with the verbal direction from Bruce York, NHTSA ODI investigator assigned to this peer inquiry, DaimlerChrysler Corporation ("DCC") is providing all requested input as described in a – e above that allege a report of rear brake tube damage caused by abrasion or corrosion which results in a brake fluid leak. Additionally, reports alleging underhood brake tube damage caused by abrasion or corrosion which results in a brake fluid leak are also provided in the spirit of complete cooperation. Complaints and reports regarding other brake system issues such as those associated with tube fittings, rubber hoses, or other issues, are not responsive to this inquiry, and therefore are not provided.

DCC's search criteria for relevant reports, in accordance with direction from Bruce York was as follows:

The word Brake in combination with any of the following terms: leak, drip, fluid, loss, level, hole, thru, through, rust, corro, tube, line, hose, pedal, fail, burst, rupture, drain, abrasion, chaf, rub.

A2. a) There are a total of 16 reports representing 13 unique vehicles that allege brake tube damage due to abrasion or corrosion resulting in brake fluid leakage. Of these reports, only one VOQ provided to NHTSA specifically alleges abrasion of the rear brake tube resulting in fluid leakage. Since there was no corresponding VIN provided with that specific report, DaimlerChrysler is unable to assess and confirm the relevance to this inquiry, although it is provided in the summary table. DaimlerChrysler is not aware of any additional reports which allege damage of the rear brake tube due to abrasion or corrosion within the subject population of 1,214,224 subject peer vehicles manufactured between 1995 and 1999.

Of the remaining 15 reports representing 12 unique vehicles which allege brake tube damage due to abrasion or corrosion, the majority of these vehicles have been in service for nearly 8 model years. This extremely low level of input does not indicate any trend or pattern. There were 7 responsive reports provided to DCC, and 4 of these reports have been investigated by an independent third-party investigator and are noted by the descriptor "SI-CAIR" (Special Investigation – Customer Assistance Information Report). The remaining 3 reports provided to DCC are designated "CAIR" (Customer Assistance Information Report).

Twelve reports allege abrasion of the brake tube in the engine compartment of the vehicle. Three of the reports provide insufficient detail regarding the location of the alleged fluid leak. Six of the 15 reports were from higher mileage vehicles, which can be expected as higher mileage vehicles have had more exposure to possible service and installation of aftermarket equipment, which provides more opportunity for improper re-installation of the brake tube or surrounding components following repair. One of the 15 reports alleged a thermal incident resulting from a brake tube leak, and further inspection by the dealer indicated that the brake tube was not the causal factor. Most of the reports indicate that although the alleged leak was sudden and unexpected, there was sufficient braking performance to bring the vehicle to a safe stop, and in many cases the brake light indicated low fluid warned the driver of a potential issue with the brake system.

b) There are five field reports that allege brake tube damage due to abrasion resulting in brake fluid leakage on the subject peer vehicle population. Two of these reports are also identified as CAIR incident reports as reported above.

c) There is one report that alleges a minor crash due to brake tube leakage, and there are no injuries or fatality incidents that allege brake tube leakage as the cause for the 1995-1999 DaimlerChrysler "LH" vehicles.

d) There are no third-party arbitration proceedings where DaimlerChrysler is or was a party to the arbitration that related to brake line failure on 1995-1999 "LH" vehicles.

e) There is one warranty litigation claim related to alleged brake tube damage for the subject peer vehicles.

The following chart summarizes the customer complaints and field reports for the peer vehicle subject model years of the investigation. Although many of the specifications remained the same for the subject components, there were several routing and design changes made when the "LH" platform was revised in the 1998 Model Year.

Subject Peer Vehicle Population: 1,214,224
1995-1997 Model Year Vehicles/1998-1999 Model Year Vehicles

Category Description	CAIR	SI – CAIR	Field Reports	Claims / Lawsuits	VOQs	Total
Brake tube abrasion – rearward of bulkhead	0/0	0/0	0/0	0/0	1[B]/0	1[B]/0
Brake tube corrosion – rearward of bulkhead	0/0	0/0	0/0	0/0	0/0	0/0
Brake tube abrasion – underhood	0/2	3[A]/1	0/5	0/0	1[A]/0	4[A]/8
Brake tube corrosion – underhood	0/0	0/0	0/0	0/0	0/0	0/0
Insufficient information available	1/0	0/0	0/0	0/1	1/0	2/1
Sub-Total	1/2	3/1	0/5	0/1	3[A,B]/0	7[A,B]/9
Total	4/3					

A) includes 1 report not believed to be relevant to this investigation
B) VIN and other relevant detail not provided

Q3. 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 and model year;
f. Vehicle's mileage at time of incident;
g. Incident date;
h. Report or claim date;
i. Type of failure (abrasion, corrosion, other, unknown);
j. Front or rear brakes (if diagonal, what half);
k. Whether a crash is alleged;
l. Whether property damage is alleged;
m. Number of alleged injuries, if any;
n. Number of alleged fatalities, if any;
o. Complaint summary; and,
p. Consumer comments, if any;

A3. Enclosure 3 contains the information detail requested for the incidents described in the answer to question 2 in the Microsoft Access 2000 format.

Q4. 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 designed for this submission.

A4. Enclosure 3 contains the information detail requested for the incidents described in the answer to question 2 in the Microsoft Access 2000 format.

Q5. 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.

A5. Enclosure 5 contains copies of all documents related to each item within the scope of response 2, categorized as Consumer Complaints, Field Reports, or Claims.

Q6. 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, the subject condition in the subject peer vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; and warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign.

Separately, for each such claim, state the following information:
DaimlerChrysler's claim number;
a. Vehicle owner or fleet name (and fleet contact person) and telephone number;
b. VIN;
c. Repair date;
d. Vehicle mileage at time of repair;
e. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
f. Labor operation number;
g. Problem code;
h. Replacement part number(s) and description(s);
i. Concern stated by customer; and
j. 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 designed for this submission.

A6. In addition to the information provided in Enclosure 6, in the file entitled "WARRANTY DATA", the chart below is a total collective count of claims separated by model year as requested.

MODEL YEAR	BRAKE TUBE WARRANTY CLAIMS
1995	126
1996	158
1997	399
1998	37
1999	118

Further analysis of the warranty data provided indicates that there is an extremely low rate of warranty claims for a population of over 1.2 million vehicles, and upon further inspection, is primarily associated with repairs not associated with the alleged defect in the subject peer vehicles.

Q7. 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 subject condition in the subject peer vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by DaimlerChrysler on the subject peer vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered). Describe any extended warranty coverage option(s) related to the subject condition that DaimlerChrysler offered for the subject peer vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.

A7. The search criteria used by DCC to identify claims to Request No. 5, can be found in the charts below:

Hose, Flexible Brake	05-30-07-06/07
Tube, To Rear Brake Hose - Replace	05-30-73-02
Tube, From Modulator/Hydraulic Control Unit (Antilock)	05-30-76-03
Tube, To Rear Sensing Proportioning Valve (Antilock)	05-30-75-02/03
Tube, To Rear Sensing Proportioning Valve (w/o Antilock)	05-30-75-04/05

The applicable part numbers are listed below:

Tube	01843251
Hose	04582442
Hose	04582443
Hose	04582272
Hose	04582273
Hose	04695308

Hose	04695309
Hose	04796862
Hose	04796863
Hose	04755258
Hose	04755259

Hose	04779012AB
Hose	04779012AC
Hose	04779012AD
Hose	04779013AB
Hose	04779013AC

Problem codes for the above referenced labor operations are provided below:

11	Broken or cracked		9X	Routed improperly
51	Improperly installed		65	Leaks
UC	Uncodeable			

The warranty provided by DCC for the 1995-1999 model year "LH" vehicles are covered under the "Basic Warranty" period, which is 3 years or 36,000 miles. Additionally, DCC dealers often perform repairs at no charge on out-of-warranty vehicles as a goodwill gesture. Customers can also purchase additional extended service contracts at their option.

Q8. Produce copies of all service, warranty, and other documents that relate to, or may relate to, the subject condition in the subject peer 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 manufacturer's short name is planning to issue within the next 120 days.

A8. There are no service, warranty, and/or other documents that relate to, or may relate to, the alleged defect in the subject peer vehicles, that DaimlerChrysler has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities.

Q9. Furnish copies of the following DaimlerChrysler engineering specifications related to durability, routing, clearances, and/or corrosion resistance of the subject components in the subject peer vehicles.

A9. Confidential Enclosure 9 contains five groups of documents that address the brake tube performance factors for the subjects of vehicle routing, clearances, and corrosion resistance.

A. Steel Tubing Material Standard: MS-1806. DaimlerChrysler Corporation Material Standard for brazed double wall steel tubing requirements MS-1806, specifies the requirements for copper brazed double wall low carbon steel tubing.

B. Engineering specifications for the manufacture of steel brake tubes on the subject peer vehicles. The various engineering standards provided describe the performance standards for the brake tube that are necessary for the components to meet the engineering criteria for functional integrity and durability. These standards are provided to the suppliers of these component parts and their adherence to these standards is required for validation.

C. DaimlerChrysler Process Standard describing the requirements, properties, and characteristics of corrosion-resistant coating systems for small diameter, carbon steel tubing: PS-8688.

D. Summary of Vehicle Durability Test Programs:

1. K1-On Road Two Wheel Drive Endurance

2. BCQ-Automatic Transaxle Endurance

3. VE-Vehicle Endurance Automatic Transmission

4. AV1-Arizona Vehicle Endurance-4 speed Automatic

5. PT2 – Powertrain Endurance – 4 Speed Automatic

6. Vehicle Corrosion Testing Durability - LP461H117

The six test programs summarized that the 1995-1999 "LH" vehicles completed prior to vehicle validation are designed to ensure the overall vehicle meets durability and design robustness requirements. These programs contain procedures which further assess the functional integrity of the brake tubes in a vehicle level environment in addition to the aging and usage factors associated with the installation and routing of the brake tubes. Galvanic corrosion can be a factor in the performance of the brake tubes. The DaimlerChrysler Corporation Vehicle Corrosion Test LP461H117 specifies a corrosion test cycle that simulates 100,000 miles of vehicle use in an extremely heavy corrosive environment and was used to validate the effect of corrosion on the brake tubes in the subject peer vehicles.

E. Summary of AMPS Sheets and Engineering Drawings:

1. Automated Manufacturing Planning System (AMPS) informational documents. The AMPS (Automated Manufacturing Planning System) documents provide the specified routing of the brake tubes when installed at the assembly plant.

2. Engineering Drawings of subject components. The Engineering Drawings provide the specified routing, associated material specifications, and dimensional information associated with the brake tube and fuel bundle assemblies in the subject peer vehicles.

These actions have been summarized as requested and submitted in Enclosure 9-confidential (CD-Rom) to Ms. Jacqueline Glassman, Office of the Chief Counsel, under separate cover with a request for confidential treatment of information.

The above information provides the relevant details of DaimlerChrysler's engineering standards and performance specifications relating to validation testing of the subject components. Regular inspection of brake tube routing is part of DaimlerChrysler's vehicle validation testing plan. In addition to checking for signs of corrosion and potential interferences by visually inspecting brake tube routing routinely, the brake system is "exercised" under a variety of conditions more severe than a typical customer would experience while performing various braking duty cycle tests during the life of the vehicle.

In addition to the aforementioned standards/tests, DaimlerChrysler additionally performs several other vehicle durability tests that are not part of DCC's standards relating specifically to vehicle durability in general. For example, DaimlerChrysler performs various Powertrain Durability fleets, Brake/Suspension durability fleets, Taxi Fleets, and mileage accumulation fleets in order to prove out a vehicle's systems level performance. These tests are "real world" type evaluations and provide invaluable development data.

The total number of unique reports (13) is very low in aggregate for a population of over 1.2 million vehicles, especially considering most of these subject peer vehicles have been in service for nearly 8 model years. DaimlerChrysler believes that the data provided does not show any trend, and therefore any relationship between any specific brake system or model year, and the reports of alleged brake tube leaks resulting from abrasion or corrosion. The reported information does indicate that higher mileage vehicles experience more of the abrasion related incidents than other vehicles (6 of 10 which provide sufficient detail), although still at an imperceptibly low rate. The higher percentage of complaints from higher mileage vehicles can be expected as higher mileage vehicles have had more service work performed, which allows the opportunity for improper re-installation improper routing following routine service. Additionally, those reports providing substantiated detail indicated that in the extremely rare cases where the

brake tube came into contact with an object, it involved a non-stationary component, like the engine or exhaust flange. In addition to possible repair related routing issues, failure of the customer to properly maintain their vehicles over a long period of time may contribute to conditions which were not seen during development or in the typical application. Finally, DaimlerChrysler is not aware of any substantiated reports alleging brake tube contact with a stationary part in the vehicle resulting leading to an eventual loss of brake fluid.

Q10. Provide the following information regarding the rear brake tubes used in the subject peer vehicles:

a. The base material composition and manufacturing method (i.e., single-walled or double-walled);
b. Tube coating systems;
c. Tube nominal outer diameter;
d. Tube outer diameter tolerances;
e. Tube nominal wall thickness;
f. Tube wall thickness tolerances;
g. Tube design pressure;
h. Tube maximum service pressures (ABS and non-ABS);
i. Tube burst pressure;
j. The minimum wall thickness necessary to contain maximum service pressures (include consideration with and without stress concentration factors representative of corroded tube walls and state all calculations used and the values of all calculation parameters);
k. Summaries and copies of corrosion performance test specifications -- conditions (e.g., salt spray tests, cyclical corrosion tests) and end-of-test requirements;
l. Summaries and copies of all corrosion performance test results; and
m. Identify all suppliers by models and model years.

A10.

a) Per the attached MS-1806, the brake tubes in the subject peer vehicles are copper brazed double wall low carbon steel tubing.

b) The tubes are coated externally with Pro-coat, which is a Zinc plated coating with Aluminum Epoxy Paint. The tube is internally coated with Zinc plating.

c) Per the attached Engineering Drawings, the tube nominal outer diameter is 4.8mm.

d) Per the attached Engineering Drawings, the tube outer diameter tolerance is +/- 0.076mm.

e) Per the attached Engineering Drawings, the tube nominal wall thickness is 0.71mm.

f) Per the attached Engineering Drawings, the tube wall thickness tolerance is +/- 0.08mm.

g) Per the attached document MS-1806, tube design pressure is specified in section 2.4.4, Pressure Proof Test.

h) Tube maximum service pressures were not differentiated between ABS and non-ABS vehicles, and were consistent with specifications called out in the attached document MS-1806. Pedal push testing, which was performed on every vehicle produced by DaimlerChrysler during the 1995-1999 Model Years, validated every vehicle by applying a brake pedal force of 100lbs., which for the subject vehicles correlates to a system pressure of approximately 1800psi. Extensive testing performed by DaimlerChrysler historically confirms that application pressures seen in the field rarely reach 1500psi before wheel lock occurs.

i) Tube burst pressure is specified in the attached document MS-1806.

j) DaimlerChrysler does not have test data which specifies minimum tube wall thickness to contain maximum service pressures. There is no evidence to suggest that information is relevant based on DCC's report rate of less than 1 condition per 100,000 vehicles.

k) Corrosion performance test specifications, conditions, and end of test requirements are specified in PS-8688, for tubing with Zinc Plating and Aluminum Epoxy Paint.

l) Summaries and copies of all corrosion performance test results for the subject peer vehicles are no longer available per DCC's record retention policies.

m) ITT Automotive, Auburn Hills, Michigan was the Tier 1 supplier to DCC of the subject components on the subject peer vehicles for the 1995-1999 model years.

Q11. Provide the following information concerning the rear brake lines and fuel lines in the subject peer vehicles:

a. Describe the basic brake system design (e.g., system split front/rear or diagonal, ABS, front/rear disc, etc.);
b. State whether the fuel and brake tubes are routed together;
c. Furnish basic diagrams of the brake and fuel tube routing/retention in the subject peer vehicles; and
d. Identify the material composition of the fuel lines.

a) The basic brake system design for the subject peer vehicles is a diagonal split system, with front disc and rear drum or rear disc available. 4 wheel ABS was available as an option.

a) The fuel and brake tubes are routed together in some applications, separated by clips as specified in the attached Engineering Drawings.

b) Basic diagrams detailing routing and retention practices are included in the Engineering Drawings provided in Confidential Enclosure 9.

c) The material composition of the fuel lines for the subject peer vehicles is also specified in PS-8688.

In summary, DaimlerChrysler Corporation's review of complaints, warranty claims, and parts demand has not identified any issue with the subject peer vehicle's brake tube assemblies. DCC believes the comprehensive development testing and vehicle durability testing that each new vehicle must complete prior to volume production has greatly contributed to the superior performance of the brake tubes and fuel tubes on the subject peer vehicle population.