

DAIMLERCHRYSLER

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8/15/06

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

August 10, 2006

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

2006 AUG 15 2 25 PM
2006

Reference: NVS-213swmc; EA06-004

Dear Mr. Quandt,

This document contains DaimlerChrysler Corporation's (plants over DCC's) response to the referenced inquiry dated June 30, 2006 regarding the steering shaft couplings and bolts, and steering wheel bolts to steering shafts in 2004 – 2007 model year Dodge Durango and 2005 – 2007 model year Dodge Dakota vehicles. In reaching the analysis and conclusions, and by providing the information contained herein, DCC is not waiving its claim to attorney work product and attorney-client privileged communications.

Out of 527,750 subject vehicles there have been no reports of intermediate shaft separation, accidents, injuries or property damage due to the alleged condition in the subject vehicles. For the vehicles identified in this inquiry alleging the subject condition, all provided observable feedback to the operator in the form of noise, looseness or play in the steering.

DCC does not believe that a trend exists based on the low level of input for this alleged condition occurring across two unique vehicles manufactured at two different assembly plants over multiple years and involving four separate joints.

Sincerely,


Stephan J. Speth

Attachments and Enclosures

Mr. Jeffrey Quandt
Reference: NVS 213 swmc; EA06-004
August 10, 2006

ATTACHMENT

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

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

Note: Unless otherwise indicated in the question response, this document contains information from November 23, 2005 (cut off date for PE05-056) through June 30, 2006 the date this information request was received.

- A1. The volumes listed in the chart below are for the entire subject vehicle population for each model year.

Model Year	Make & Model (Designation)	U.S. Market Volume
2004	Dodge Durango (HB)	129,967
2005	Dodge Durango (HB)	114,642
2006	Dodge Durango (HB)	83,815
2007	Dodge Durango (HB)	273
2005	Dodge Dakota (ND)	113,846
2006	Dodge Dakota (ND)	85,120
2007	Dodge Dakota (ND)	87
Total Volume		527,750

2. **State the number of each of the following, received by DCC, or of which DCC is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:**
 - a. **Consumer complaints, including those from fleet operators;**
 - b. **Field reports, including dealer field reports;**
 - c. **Reports 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;**

- b. There are four Durango (HB) field reports containing three unique VINs (noted below) that relate to, or may relate to, the alleged condition. There are no Dakota (ND) field reports.

Field Reports by Unique VIN:

Model	Steering Wheel		Intermediate Shaft --> Low Torque				Intermediate Shaft --> Missing				Location Unknown
	Loose	Missing	@Column	Upper U-Joint	@Gear	Location Unknown	@Column	Upper U-Joint	@Gear	Location Unknown	
04HB	0	0	0	0	0	0	0	0	0	0	0
05HB	0	0	0	0	0	0	0	0	0	1	0
06HB	0	0	1	0	1	0	0	0	0	0	0
07HB	0	0	0	0	0	0	0	0	0	0	0
05ND	0	0	0	0	0	0	0	0	0	0	0
06ND	0	0	0	0	0	0	0	0	0	0	0
07ND	0	0	0	0	0	0	0	0	0	0	0

- c. There are no reports involving crash, injury or fatality that are responsive to this inquiry.
- d. There are no reports involving fire that are responsive to this inquiry.
- e. There are no claims that allege property damage that are responsive to this inquiry.
- f. There are no third party arbitration proceedings where DCC is, or was, a party to the arbitration, that are responsive to this inquiry.
- g. There are no lawsuits, either pending or closed, against DCC, in which DCC is or was a defendant or codefendant, that are responsive to this inquiry.

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. **DCC'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. Whether a crash is alleged;
- j. Whether property damage is alleged;
- k. Number of alleged injuries, if any; and
- l. 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 which provides further details regarding this submission.

- A3. The detailed summary of all requested information in response to Request 2 is provided in Enclosure 3 as a Microsoft access 2000 compatible format, titled "Request Number 2 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 DCC used for organizing the documents.**
- A4. Copies of all documents within the scope of Request 2 are provided in Enclosure 4, titled "CAIR & Field Reports".
5. **State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by DCC 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:

- a. DCC'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. Concern stated by customer; and
- k. 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 which provides further details regarding this submission.

A5.

Model Year	Dodge Durango	Dodge Dakota	Total Claims
2004	29	N/A	29
2005	58	207	265
2006	14	87	101
2007	0	0	0
Total Claims	101	294	395

It is often not possible to determine whether any particular warranty claim is in any way related to the alleged condition. There are other random issues, not related to the alleged condition, that trigger replacement of the subject components. DCC has concluded that warranty data cannot be utilized to determine any trend related to the alleged condition.

The detailed response that lists the warranty claim information is provided in Enclosure 5, titled "Warranty Data".

6. Describe in detail the search criteria used by DCC 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 DCC 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 DCC 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 in response to Request No. 5 can be found in the chart below:

Repair Description	Labor Operation Code
Lower Coupling	19201200
Lower Coupling Steering Shaft	19201203
Intermediate Shaft	19208100
Steering Column Assembly	19208300
Steering Wheel	19850100

Failure Code	Description
51	Improperly Installed
54	Improperly Assembled
3R	High/Low Operating Effort
FA	Stripped
UC	Uncodeable

The standard warranty offered by DCC on all 2004 through 2007 model year HB and 2005 through 2007 model year ND vehicles is 36 months / 36,000 miles. There was no extended warranty coverage option 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 with 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 DCC 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 DCC is planning to issue within the next 120 days.**
- A7. There have been no service, warranty, or other documents issued to dealers, regional or zone offices, field offices, fleet purchasers, or other entities since the PE05-056 response that relate to, or may relate to, the alleged defect in the subject vehicles. There are no communications planned for the next 120 days.
- 8. Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") including, but not limited to, pre-production and development tests, 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, DCC. 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.

The following chart summarizes testing on the intermediate shaft assembly for the Durango (HB) and Dakota (ND) vehicles initiated since the submission of the response to PE05-056 on January 20, 2006.

Mr. Jeffrey Quandt
Reference: NVS 213 swmc; EA06-004
August 10, 2006

ATTACHMENT

Report Number	Title	Start Date	End Date	Objective of the Action	Lead Responsible	Summary
TLR # 06024	Torsional Vibration	6/12/2006	in process	Verify minimum torque yields robust joint.	DCC	Testing 85% complete (1st of 4 tests) - No issues.
TLR # 06025	Static Vibration	6/6/2006	7/13/2006	Verify minimum torque yields robust joint.	DCC	No torque loss

The detailed information for the applicable testing is provided in Enclosure 8, titled "Testing Summary".

9. Describe all modifications or changes made by, or on behalf of, DCC in the design, material composition, manufacture, quality control, supply, or installation of the subject component, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. For each such modification or change, provide the following information:

- a. The date or approximate date on which the modification or change was incorporated into vehicle production;
- b. A detailed description of the modification or change;
- c. The reason(s) for the modification or change;
- d. The part numbers (service and engineering) of the original component;
- e. The part number (service and engineering) of the modified component;
- f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
- g. When the modified component was made available as a service component; and
- h. Whether the modified component can be interchanged with earlier production components.

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

A9. A detailed summary of all applicable modifications or changes is provided in Enclosure 9, titled "Change History".

10. Produce one of each of the following:

- a. Bolt part number 06505656AA;
- b. Bolt part number 06506950AA

A10. The requested bolts are being provided in conjunction with this submission. Fastener part numbers 06505656AA and 06507532AA are interchangeable, with the only difference being 1 mm in head height.

11. Regarding the 2005 Dakota vehicle:

- a. Explain in detail the engineering bases for the original nominal dynamic torque specifications for the subject fasteners and provide copies of all related documents.**
- b. Describe, and provide copies of all documents related to, all tests or other analyses conducted by, or for, DCC concerning: (a) the relationship between bolt torque and clamp load for each of the subject fasteners with each type of thread treatment that was used or studied; and (b) the minimum clamp load required for each of the subject fasteners and thread treatment.**
- c. Describe, and provide copies of, all assembly plant procedures designed to prevent the bolts from being torqued below the specified range.**
- d. State DCC's assessment of the effects of tightening the bolts 20% to 35% below the minimum torque specification on achieving the necessary clamp loads, explain how DCC verified/validated that the lower torques were acceptable, describe all related testing and provide copies of all related documents.**
- e. State when the commonization began.**
- f. What torque specs are being used in current production Dakota?**
- g. For Dakota and Durango, the DCC service information procedure for installation of steering couplings and steering wheels requires the use of new bolts. Please indicate the rationale(s) for this requirement. State what the DCC recommended practices are regarding this bolt and its replacement when a previously installed bolt is either loose or missing. If a previously installed bolt is removed or loosened does proper procedure require a new replacement bolt be used? What process controls, if any, are in place to ensure that the bolt is replaced when required?**

A11a. The original nominal dynamic torque specification was developed by DCC Fastener Engineering utilizing production representative parts within a laboratory environment. This torque was based upon engineering experience taking into consideration the joint material type and fastener specified for the application. A query of Fastener Engineering records revealed no related documents. The initial Dakota (ND) 2005 model year dynamic torque specification for the intermediate shaft to steering column was 28 ft-lbs to commonize with the Dodge Ram. Subsequently, the dynamic torque for the intermediate shaft to steering column was increased on August 14, 2005 to 43 ft-lb for the 2006 model year. A complete engineering change history is provided in response to question 9. Both torque values have passed laboratory and vehicle validation testing and are audited within the assembly plant to confirm robustness.

- b. Two separate tests were performed to evaluate the robustness of the steering column to intermediate shaft joint, utilizing the minimum allowable torque for an intermediate shaft clevis and the released fastener including thread treatment. Testing confirmed the joint will not move when subjected to 400 pounds axial force at the minimum torque condition. Testing is summarized in response to question 8.
- c. Assembly plant procedures to prevent bolts from being torqued below the specified range were previously provided in video format with the prior response to PE05-056. The

relevant operator standard work instructions outlining additional process controls are being submitted as Enclosure 11, titled "SWI (Standard Work Instructions), Confidential" to the Office of the Chief Counsel, under separate cover with a request for confidential treatment.

- d. DCC testing confirmed 21 ft-lbs torque for the intermediate shaft to steering column is robust to achieve proper clevis clamp load. Testing results are summarized in response to question 8 (TLR# 06025).
- e. The commonization of the torque for the intermediate shaft to steering column with the Dodge Ram began with the 2005 model year launch of the Dakota (ND).
- f. The current Dakota (ND) torque specifications are:

	Steering Wheel Attachment	Upper I-Shaft to Column	Upper I-Shaft to Lower I-Shaft	Lower I- Shaft to Gear
ND	47 ft-lbs +9, -5	43 ft-lbs +6, -8	43 ft-lbs +6, -8	43 ft-lbs +6, -8

- g. DCC's service procedures require the use of a new fastener for all repairs. The primary reason for this requirement is to ensure thread adhesive is restored. Thread adhesive is not required for a properly torqued robust joint, but it is DCC's best practice guideline for redundant process control.

12. Provide the complete warranty history for the following vehicles:

1D4HB48N85F
1D4HB48N55F
1D4HB48D95F
1D7HE42K75S
1D7HE42K75S
1D4HB48N04F
1D4HB48D34F
1D4HB58D74F
1D4HB48N94F
1D4HB48N64F
1D4HB48N64F
1D7HE48N15S
1D7HW42N65S
1D7HW48N35S
1D4HB48N25F

A12. The complete warranty history for the requested VINs is provided in Enclosure 12, titled "Warranty History".

Mr. Jeffrey Quandt
Reference: NVS 213 swmc; EA06-004
August 10, 2006

ATTACHMENT

13. Provide copies of the images noted in TREAD Field Report No. 108010993 on VIN 1D4HB48246F [REDACTED]

A13. The copy of this TREAD related images is provided in Enclosure 13, titled "6F131709 Images".

14. Provide a video recording that shows the "Buy-Off" procedure for MPBO for intermediate shafts and steering wheels for Durango sport utility vehicles.

A14. The requested video recording is being provided in conjunction with this response.

15. Furnish a root cause analysis of

- a. TREAD Field Report No. 108022205 for VIN 1D4HB48N25F5 [REDACTED] and
- b. TREAD Field Report No. 108011896 for VIN 1D4HD58D24F1 [REDACTED]

A15. It is impossible to provide a conclusive root cause analysis; only hypothesis can be provided based upon verified facts.

Vehicle 5F539229 was not subjected to in-plant repair and the tooling confirmed that dynamic torque was achieved. Based upon the field return photographs the most plausible explanation is that the steering wheel to steering column alignment notch was not seated and the fastener was torqued. The torque validation provided a false positive resulting in the vehicle being released from station. The witness marks on the fastener are consistent with this theory. If this scenario occurred, the steering wheel would have been rearward of the intended design position, providing visual cues to alert the assembly person.

Additionally, the clockspring comments noted are not consistent with the reported condition. The steering column must rotate freely in order for the clockspring to become damaged. There are other scenarios after the vehicle left the assembly plant control that may also explain this condition. DCC is not aware of any other similar reports.

Vehicle 4F196864 was flagged by assembly plant controls for steering wheel to steering column repair and manually bought off. It is possible that the steering wheel was hand assembled to the steering column spline and the fastener hand started. The steering wheel to column taper lock would be sufficient to provide adequate "firmness" to a repair person, and that person may have manually bought off on the repair without the proper verification procedures. There are other scenarios after the vehicle left the assembly plant control that may also explain this condition.

16. Furnish DCC's assessment of the alleged defect in the subject vehicle, including:

- a. The causal or contributory factor(s);

- b. The failure mechanism(s);**
- c. The risk to motor vehicle safety of (1) a loose steering shaft coupling bolt; (2) a missing steering shaft coupling bolt; (3) a loose steering wheel retention bolt; and (4) a missing steering wheel retention bolt.**

A16. Out of 527,750 subject vehicles there have been no verified reports of intermediate shaft separation, accidents, injuries or property damage due to the alleged condition.

There is no risk to motor vehicle safety for Durango (HB) loose intermediate shaft bolts. The same is true for Dakota (ND) intermediate shaft to column or upper intermediate shaft to lower intermediate shaft. These joints by design contain a whistle notch, where the bolt passes through the notch and creates a mechanical tether preventing separation. The function of this tether is independent of torque. Additionally, the steering wheel to steering column interface is a splined taper lock joint. Once taper lock is obtained, special tooling is required to separate the joint. Taper lock can be achieved at low fastener torque, and the spline interface maintains steering transfer integrity independent of torque.

DCC is not aware of any missing steering wheel fasteners out of 527,750 subject vehicles. The reported missing intermediate shaft fasteners do not constitute an unreasonable risk to motor vehicle safety because the steering column to intermediate shaft and intermediate shaft to steering gear both contain over 20mm of engagement in their free states. This overlap protects vehicle steering integrity in the absence of a fastener. An extreme body motion event would be required to separate the subject components.

For the vehicles identified in this inquiry alleging the subject condition, observable feedback is provided to the operator in the form of looseness, noise and/or play in the steering. The existence of such feedback, as well as the presence of audible noise if the intermediate shaft bolts are below specified torque levels or even missing, was confirmed during subject vehicle steering system rotational lash studies referenced in the prior response to PE05-056.

DCC does not believe that a trend exists based on the low level of input for this condition occurring across two unique vehicles manufactured at two different assembly plants over multiple model years and involving four separate joints.