



June 13, 2013

Mr. Jeffrey Quandt
Chief, Vehicle Control Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington, D.C. 20590

RE: NVS-213hkb, PE13-007

Dear Mr. Quandt:

On behalf of Hyundai Motor Company (Hyundai), Hyundai America Technical Center, Inc. (HATCI) hereby submits this letter responding to the above referenced request.

This letter provides a response to your above referenced request for information, dated April 11, 2013. Responses provided in Hyundai's May 30, 2013 (partial) response are also included. Hyundai continues to evaluate the data in response to this investigation.

Prior to responding to the request, Hyundai objects to NHTSA's boilerplate definition of "Document" as vague, incomprehensible, overly broad and unduly burdensome. Hyundai has made a good faith, reasonable attempt to search for materials responsive to each request in the time frame provided.

Request 1.

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

- a. Vehicle identification number (VIN);
- b. Make;
- c. Model;
- d. Model Year
- e. Subject component part number and design version installed as original equipment;
- f. Date of manufacture;
- g. Date warranty coverage commenced; and

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HATCI is an authorized representative of both Hyundai Motor Company and Kia Motors Corporation; which are separate and distinct automotive manufacturers.

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- 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."

Response to Request 1.

Model Year	Production Quantity
2006	170,782
2007	124,930
2008	97,995

See ATTACHMENT "PRODUCTION DATA.accdb" for requested information.

Source: Hyundai Motor America
Information as of May 21, 2013

Request 2.

State the number of each of the following, received by Hyundai, or of which Hyundai 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;
- d. Property damage claims; and
- e. Third-party arbitration proceedings where Hyundai is or was a party to the arbitration; and
- f. Lawsuits, both pending and closed, in which Hyundai is or was a defendant or codefendant.

For subparts "a" through "f" 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 Hyundai's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e and f" identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

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Response to Request 2.

- a. Consumer complaints, including those from fleet operators;
Seven
- b. Field reports, including dealer field reports;
None
- c. Reports involving an injury, or fatality;
None
- d. Property damage claims;
None
- e. Third-party arbitration proceedings where Hyundai is or was a party to the arbitration;
None
- f. Lawsuits, both pending and closed, in which Hyundai is or was a defendant or codefendant.
None

Source: Hyundai Motor America
Information as of May 27, 2013

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. Hyundai'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. Which rear control arm failed (i.e. left or right side, upper or lower);

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- 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."

Response to Request 3.

See ATTACHMENT "REQUEST NUMBER TWO DATA.accdb" for requested information.

Source: Hyundai Motor America
Information as of May 27, 2013

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 Hyundai used for organizing the documents.

Response to Request 4.

See Attachment A for requested Hyundai report information. Files identified with VIN.

Source: Hyundai Motor America
Information as of May 27, 2013

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 Hyundai 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. Hyundai's claim number;
- b. Vehicle owner or fleet name (and fleet contact person) and telephone number;
- c. Vehicle owner's or fleet address
- d. VIN;
- e. Repair date;
- f. Vehicle mileage at time of repair;
- g. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;

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- h. Labor operation number;
- i. Problem code;
- j. Replacement part number(s) and description(s);
- k. All customer concern narratives; and
- l. All dealer/technician comment narratives.

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

Response to Request 5.

Sonata Model Year	2006	2007	2008
Claim Quantity	5	3	0

See Attachment “WARRANTY DATA.accdb” for additional requested information.

Source: Hyundai Motor America
Information as of May 27, 2013

Request 6.

Describe in detail the search criteria used by Hyundai 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 Hyundai 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 Hyundai 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 to Request 6.

The claims were identified by searching for warranty claims containing information for the Rear Crossmember Assembly (P/N 55410-3K***), LH Rear Suspension Arm Assembly (55210-3K***), RH Rear Suspension Arm Assembly (55220-3K***), LH Upper Arm Assembly (55110-3K***), and RH Upper Arm Assembly (55120-3K***). Claims that contained a Nature Code N56 (Rust, Corrosion) and/or a Cause Code C05 (Rusty, Corroded) were reviewed. Additionally, claims that contained reference to the alleged defect were also included.

See Attachment B for a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to the claims provided in response to Request No. 5.

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The Hyundai New Vehicle Limited Warranty period is limited to 60 months from the date of original retail delivery or date of first use, or 60,000 miles, whichever occurs first. The 2006 through 2008 Sonata are covered by the Hyundai New Vehicle Limited Warranty.

Prior to April 20, 2007, Hyundai offered two extended warranty options for the subject vehicles. One plan offered coverage for 72 months or 75,000 miles and the second plan offered coverage for 120 months or 100,000 miles from the date of first use. The number of vehicles covered under each extended warranty plan is as follows:

72 months or 75,000 miles plan:

Model/ Model Year	2006	2007	2008
Sonata	600	215	0

120 months or 100,000 miles plan:

Model/ Model Year	2006	2007	2008
Sonata	12,041	3,994	0

After April 20, 2007, Hyundai offered five different extended warranty option plans. See Attachments I and J for coverage details and the number of vehicles covered by each plan.

Source: Hyundai Motor America
Information as of June 11, 2013

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 Hyundai 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 Hyundai is planning to issue within the next 120 days.

Response to Request 7.

No responsive Hyundai documents exist.

Source: Hyundai Motor America
Information as of May 27, 2013

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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, Hyundai. 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 to Request 8.

1. Initial Pre-Production Corrosion Durability Analysis:

- a. Pilot Vehicle Corrosion Durability 10 Phase Test
- b. April 27, 2004
- c. October 15, 2004
- d. Test Condition Summary:
 - i. Test Car : Pilot #29 (2.4L engine, automatic transaxle)
 - ii. Test Procedure summary:
 - a) Drive 115km/day for a total of 9,200 km
 - b) Chamber Soaking: 20 hours/day; total 1,600 hours
 - c) Test procedure: 80 cycles; one cycle per day for 80 days
 - 1) Driving (4 hours)
 - 2) Salt spray soak (3 hours)
 - 3) Humidity soak (14 hours)
 - 4) Sunlight (3 hours)
- e. Quality Assurance Team at supplier Donghee Industrial Company, 1030-2, Changgok-Ri, Paltan-Myun, Hwasung-Si, Gyunggi-Do, Korea 445-913
- f. No functional issues identified.

2. 2013 Corrosion Survey:

- a. Corrosion survey
- b. April 7, 2013
- c. April 27, 2013
- d. Survey of customer vehicles at Hyundai dealerships in Canada and USA

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- e. Hyundai Motor Company Research and Development, Quality Assurance; Component vendors
- f. See Attachment K for preliminary survey results

Source: Hyundai Motor Company
Information as of June 12, 2013

Request 9.

Describe all modifications or changes made by, or on behalf of, Hyundai in the design, material composition, manufacture, quality control, supply, or installation of the subject assembly, 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 number(s) (service and engineering) of the original component;
- e. The part number(s) (service and engineering) of the modified component;
- f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
- 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 Hyundai is aware of which may be incorporated into vehicle production within the next 120 days.

Response to Request 9.

See Attachment C

Source: Hyundai Motor Company
Information as of May 27, 2013

Request 10.

Provide the following information regarding the subject assembly:

- a. Provide a description of the rear suspension assembly, including a diagram labeling all suspension arms and structural components;
- b. Describe the purpose of each suspension arm used in the rear suspension assembly;
- c. For each suspension arm in the subject assembly, describe the effects on vehicle handling control of (1) a complete detachment; and (b) a partial detachment;

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- d. Provide all design FMEAs (Failure Mode Effects Analysis) related to the subject assembly including any FMEAs related to corrosion failures;
- e. Describe all potential paths for water and other foreign material entering the rear crossmember and Hyundai's assessment of the primary entry path associated with observed corrosion failures;
- f. Provide Hyundai's assessment of collection points for water and other foreign material that has entered the rear crossmember;
- g. Describe the corrosion protection system for the rear crossmember (internal and external), including all minimum thickness specifications for anti-corrosion protection systems and drainage features and provide copies of all related specifications;
- h. Using a diagram or photograph of the subject assembly, identify the areas Hyundai believes are experiencing the most severe corrosion and the most common suspension arm separation points;
- i. Give Hyundai's assessment of the geographic distribution of failure risk based on failure rates and trend, field surveys or other data used by Hyundai to measure corrosion patterns in the United States in suspension components; and
- j. Describe all requirements for salt-spray and other durability tests related to corrosion resistance and provide copies of all documents related to such requirements and test results for the subject vehicles.

Response to Request 10.

- a. See Attachment D
- b. See Attachment E
- c.
 - i) With complete suspension arm detachment from crossmember: loss of axle support at control arm mounting point;
 - ii) With partial suspension arm detachment from crossmember: affects rear tire camber.
- d. No responsive documents exist.
- e. Preliminary information is provided in Attachment F. Hyundai is currently investigating this issue.
- f. Preliminary information is provided in Attachment F. Hyundai is currently investigating this issue.
- g. Related Specifications:
 - i. MS630-01 (Painting-metal products Rust prevention) Internal/External paint thickness : minimum 20 μ m/25 μ m Salt spray test 720Hr
 - ii. MS600-66 (Test method for accelerated corrosion under complex environment conditions) complex corrosion test: Mode-C 84 cycle.

See Attachment L

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- h. Hyundai continues to evaluate the data in response to this investigation. Attachment K provides preliminary field survey results.
- i. The geographical occurrence of crossmember corrosion is in the "Salt Belt" area of the northeast United States.
- j. See Attachment L

Source: Hyundai Motor Company
Information as of June 11, 2013

Request 11.

State the number of the following parts that Hyundai has sold that may be used in the subject vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle in which it is used and month/year of sale (including the cutoff date for sales, if applicable). Also identify by make, model and model year, any other vehicles of which Hyundai is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

- a. Rear crossmember;
- b. All rear suspension arms;
- c. Any kits that have been released, or developed, by Hyundai for use in service repairs to the subject assembly.

For each component part number, provide the supplier's name, address, and appropriate point of contact (name, title, and telephone number). Also identify by make, model and model year, any other vehicles of which Hyundai is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

Response to Request 11.

See Attachment G for requested part sales information of subject components. No kits have been released or developed.

Source: Hyundai Motor America
Information as of May 27, 2013

The 2006 – 2008 Hyundai Azera utilizes the identical crossmember and upper/lower rear control arm components as the subject vehicles.

See Attachment H for supplier information

Source: Hyundai Motor Company
Information as of May 30, 2013

Hyundai-Kia America Technical Center, Inc.

Request 12.

Furnish Hyundai'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 failure mode(s);
- d. The risk to motor vehicle safety that it poses;
- e. The effect on vehicle control while driving at highway speeds (e.g. speeds ≥ 55 mph) and while turning at speeds above and below 55 mph;
- f. 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
- g. The reports included with this inquiry.

Response to Request 12.

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

Preliminary information indicates road salt contamination of the crossmember assembly can result from vehicle operation over roads that have been coated with salt to promote deicing during the winter months. Water and road salt contamination may enter the crossmember through holes or joints between metal components. The water and road salt contamination may collect in certain areas because of insufficient drainage. The contamination causes corrosion of the inner surfaces of the trailing arms and prolonged exposure to the road salt contamination may result in corrosive damage to the crossmember.

- b. The failure mechanism(s);

Preliminary information indicates repeated exposure to water-borne road salt results in gradual and progressive corrosion of the inner surfaces of the crossmember. Over time, the corrosion will result in perforations and holes that are visible on the outside of the crossmember.

- c. The failure mode(s);

Each rear tire and wheel assembly is positioned by a trailing arm, an assist arm, an upper and a lower control arm and a shock absorber assembly. Preliminary information indicates that in advanced cases, crossmember corrosion can result in failure of one of the control arm mounting points such that the arm no longer supports the wheel. In the event of such failure, the wheel remains connected to the vehicle by trailing arm, the assist arm, the other control arm, the shock absorber and the axle. Complete failure of crossmember's control arm mounting points can significantly impact rear wheel alignment and drivability by affecting the camber alignment of the wheel.

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- d. The risk to motor vehicle safety that it poses;

Hyundai continues to evaluate the data in response to this investigation. Customers may be alerted to the gradual corrosion during vehicle maintenance, handling characteristics or noise. If the connection between the rear crossmember and a control arm separates, handling of the vehicle may be adversely affected, which may increase the risk of a vehicle crash.

- e. The effect on vehicle control while driving at highway speeds (e.g. speeds ≥ 55 mph) and while turning at speeds above and below 55 mph;

A separated control arm would affect the alignment of the rear tire and wheel that are located by that control arm. The misaligned rear tire and wheel assembly may adversely affect the handling of the vehicle and drivability.

- f. 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

The driver and occupants may become aware of an unusual noise in the rear of the vehicle. The noise may be described in various ways, such as creaking, snapping or thumping. Drivers may also notice a change in turning or braking, which indicates the need to seek service.

- g. The reports included with this inquiry.

NHTSA provided 6 Vehicle Owner Questionnaires with this inquiry. None of the 6 VOQs claim that a crash occurred. None of the 6 VOQs alleges that any injury occurred.

The reports provided to Hyundai and supplied in response to this inquiry are similar in that the reports are from the salt belt. Hyundai continues to evaluate the data in response to this investigation.

Source: Hyundai Motor Company
Information as of June 11, 2013

Sincerely,



Robert Babcock
Director, Certification and Compliance Affairs
Hyundai-Kia America Technical Center, Inc.

Hyundai-Kia America Technical Center, Inc.

Attachments:

Two CDs, each containing:

PRODUCTION DATA. accdb;

REQUEST NUMBER TWO DATA. accdb;

WARRANTY DATA. accdb

Attachment A - Consumer Contact files

Attachment B - Response to Request 6

Attachment C - Response to Request 9

Attachment D - Response to Request 10a

Attachment E - Response to Request 10b

Attachment F - Response to Requests 10e and 10f

Attachment G - Response to Request 11

Attachment H – Response to Request 11

Attachment I – Updated Response to Request 6 (1)

Attachment J – Updated Response to Request 6 (2)

Attachment K – Updated Response to Request 8

Attachment L – Updated Response to Requests 10g and 10j