

OFFICE OF DEFECTS &
INVESTIGATIONS

2014 SEP 15 P 4: 21



HYUNDAI
NEW THINKING.
NEW POSSIBILITIES.

September 12, 2014

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

RE: NVS-212eer, PE14-023

Dear Mr. Yon:

This letter provides a response to your above referenced request for information, dated July 31, 2014. The response date for this Information Request was September 12, 2014. NHTSA granted an extension until September 19, 2014 to provide complete responses to this Information Request. Hyundai is able to provide responses to all of the questions in this Information Request by the original date of September 12, 2014. As referenced in the response to question numbers 8 and 12, Hyundai is continuing to conduct testing and analyses, and will provide NHTSA with that information on an ongoing basis.

Prior to responding to the Information Request, Hyundai notes that it considers the definition of "document" in the Information Request to be unreasonably broad, vague, and ambiguous, and to exceed the scope of records that might reasonably be expected to bear relevant information.

Hyundai's response to this Information Request was based on searches of locations where documents determined to be responsive to the information request would normally be found and in consultation with current personnel knowledgeable about the information requested. As a result, the scope of this search did not include, nor could it reasonably include, "all of its past and present officers and employees, whether assigned to principal offices or any field or other location, including all divisions, subsidiaries (whether or not incorporated) and affiliated enterprises and all of headquarters, regional, zone and other offices and their employees, and all agents, contractors, consultants, attorneys and law firms and other persons engaged directly or indirectly (e.g., employee of a consultant) by or under the control of Hyundai (including all business units and persons previously referred to), who are or, in or after January 1, 2005, were involved in any way with any of the following related to the alleged defect in the subject vehicles:

- a. Design, engineering, analysis, modification or production (e.g. quality control);
- b. Testing, assessment or evaluation;

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- c. Consideration, or recognition of potential or actual defects, reporting, record-keeping and information management (e.g., complaints, field reports, warranty information, part sales), analysis, claims, or lawsuits; or
- d. Communication to, from or intended for zone representatives, fleets, dealers, or other field locations, including but not limited people who have the capacity to obtain information from dealers.”

Hyundai construes the Information Request as pertaining to vehicles manufactured for sale in the United States and its territories.

Request 1.

State, by model and model year, the number of subject vehicles 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. Date of manufacture;
- f. Date warranty coverage commenced; and
- g. 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 2010, or a compatible format, entitled "PRODUCTION DATA."

Response to Request 1.

MODEL/MODEL YEAR	2006	2007	2008
Sonata	171,087	125,180	97,995

Refer to ATTACHMENT “PE14-023 PRODUCTION DATA.accdb” for requested information.

Source: Hyundai Motor America
Information as of September 8, 2014

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;

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- 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.

Response to Request 2.

- a. Consumer complaints involving illumination of airbag warning light, including those from fleet operators;

Model / Model Year	2006	2007	2008
Sonata	150	80	1

- b. Field reports, including dealer field reports;

Model / Model Year	2006	2007	2008
Sonata	23	9	1

Hyundai is also providing the following Technical Assistance Line contact count

Model / Model Year	2006	2007	2008
Sonata	392	169	11

- c. Reports involving an injury, or fatality;

Model / Model Year	2006	2007	2008
Sonata	None	None	None

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d. Property damage claims;

Model / Model Year	2006	2007	2008
Sonata	None	None	None

e. Third-party arbitration proceedings where Hyundai is or was a party to the arbitration;

Model / Model Year	2006	2007	2008
Sonata	None	None	None

f. Lawsuits, both pending and closed, in which Hyundai is or was a defendant or codefendant.

Model / Model Year	2006	2007	2008
Sonata	None	None	None

Source: Hyundai Motor America
Information as of September 8, 2014

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 an air bag warning light illumination was alleged;
- j. And if so, the value(s) of any stored diagnostic trouble code(s);
 - i. Whether driver and/or passenger seat belt buckles were affected;
- k. Whether a crash is alleged;
- l. Whether property damage is alleged;
- m. Number of alleged injuries, if any; and

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n. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "REQUEST NUMBER TWO DATA."

Response to Request 3.

Refer to ATTACHMENT "PE14-023 REQUEST NUMBER TWO DATA.accdb" for requested information.

Source: Hyundai Motor America
Information as of September 9, 2014

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. Describe in detail the search methods and search criteria used by Hyundai to identify the items in response to Request No. 2.

Response to Request 4.

Refer to ATTACHMENT A for requested Hyundai report information. Consumer Contact and Field Report files are identified in individual folders by VIN. Technical Assistance Line data provided in file "PE14-023 Techline Contacts.xlsx."

Source: Hyundai Motor America
Information as of September 9, 2014

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;

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- 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. Whether an air bag warning light illumination was alleged;
 - i) And if so, the value(s) of any stored diagnostic trouble code(s);
- j. Whether driver and/or passenger seat belt buckles were affected;
- k. Replacement part number(s) and description(s);
- l. Concern stated by customer; and
- m. Comment, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "WARRANTY DATA."

Response to Request 5.

Claim count information:

Model / Model Year	2006	2007	2008
Sonata	16,328	7,759	319

See ATTACHMENT "PE14-023 WARRANTY DATA.accdb" for additional requested information.

Source: Hyundai Motor America
Information as of September 7, 2014

Request 6.

Describe in detail the search methods and search criteria used by Hyundai to identify the claims 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.

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Response to Request 6.

The claims were identified by searching for all warranty claims for the subject vehicles related to the front seat belt buckle assemblies potentially related to the alleged defect.

See ATTACHMENT "PE14-023 WARRANTY CODES.xlsx" for a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions associated with the claims provided in response to Request No. 5.

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. Occupant restraint systems are covered by the Hyundai New Vehicle Limited Warranty.

Before April, 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. Occupant restraint systems were not covered by either Hyundai extended warranty plan. 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	565	216	0

120 months or 100,000 miles plan

Model / Model Year	2006	2007	2008
Sonata	11,076	3,956	0

In April, 2007, Hyundai offered five extended warranty options for the subject vehicles. Coverage time and mileage terms were selectable under each plan. Occupant restraint systems were not covered by either Hyundai extended warranty plan. The number of vehicles covered under each extended warranty plan is shown on the following page.

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Model Year	Term		Extended Warranty Option				
	Years	Mileage	Silver	Gold	Gold Plus	Platinum	Powertrain
2006	3	36000	2	3	5	11	4
	4	48000	4	4	11	30	2
		60000	1	1	1	4	0
	5	60000	4	5	15	70	1
		75000	0	0	6	8	2
		100000	1	3	2	15	1
	6	60000	1	3	6	38	0
		72000	11	14	29	253	10
		85000	0	1	3	4	0
		100000	1	2	1	18	0
	7	70000	0	1	1	4	0
		100000	3	6	4	25	4
	8	85000	0	2	3	12	0
10	100000	5	19	17	118	11	
2007	3	36000	4	4	3	8	5
	4	48000	4	2	8	20	3
		60000	0	1	2	2	0
		100000	0	0	0	2	0
	5	60000	8	8	24	85	3
		75000	16	5	10	31	2
		100000	2	11	3	102	1
	6	60000	2	6	4	50	1
		72000	9	27	44	261	8
		85000	0	2	3	24	0
		100000	3	10	27	96	1
	7	70000	0	3	1	13	0
		100000	7	7	10	171	2
8	85000	0	5	6	40	0	
10	100000	30	87	145	1171	12	
2008	3	36000	3	3	0	2	3
	4	48000	4	3	6	12	3
		60000	0	1	1	5	0
		100000	0	0	0	2	0
	5	60000	3	2	12	35	3
		75000	18	7	10	38	0
		100000	8	14	13	172	0
	6	60000	2	1	14	43	2
		72000	7	15	48	214	2
		85000	1	0	5	30	2
		100000	3	8	10	144	0
	7	70000	0	1	5	46	0
		100000	0	10	24	297	0
8	85000	2	2	5	27	0	
10	100000	45	162	189	1981	7	

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Source: Hyundai Motor America
Information as of August 19, 2014

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.

Hyundai has not identified any responsive documents.

Source: Hyundai Motor America
Information as of September 8, 2014

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. Attachment B provides Airbag System Electrical performance tests that were conducted between October 22, 2004 and January 7, 2005.

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Attachment B has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

2. Attachment C provides a summary of sled test developmental testing that occurred between October 27, 2004 and March 3, 2005. Hyundai will provide underlying test reports if requested by the agency.
3. Attachment D provides a November 8, 2005 SRS calibration report and supporting data for the NF Sonata.

Attachment D has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

4. Attachment E provides NF Sonata seat belt certification documents. Testing was performed between September 20, 2004 and October 11, 2004.
5. Attachment F summarizes a simulation conducted by Hyundai Motor Company's Advance Computer Aided Engineering Team on August 22, 2006. The 56 kph frontal barrier impact test NCAP simulation indicated the addition of a driver's belt buckle pretensioner resulted in a slightly improved maximum thorax acceleration measurement; however, as the simulation demonstrates, the performance of a vehicle with a single retractor pretensioner maintained a NCAP "5 star" rating
6. Attachment G provides Quality Information Reports related to illumination of the airbag warning light and the subject component.
7. On October 10, 2006 a meeting was held at the Nam Yang Research and Design Center to consider improvements in the subject components in Korean-market Sonatas. The meeting considered the use of a double-lock type wiring connector (JST) for the seat belt buckle. The meeting minutes are attached as Attachment H. As described in Attachment M, engineering orders were issued in October, 2006 changing the seat belt buckle connector. The double-lock connector was applied to all production vehicles on March 7, 2007 (refer to EO H0A60221 provided in responses to Request 10).
8. Attachment I provides a copy of a presentation to Hyundai Motor Company by J.S.T. Mfg. Co., Ltd. On October 12, 2006 describing the details of the JST connectors and comparing AMP and JST brand connectors.
9. Attachment J provides a summary of a field survey conducted by Hyundai from August 17, 2014 through August 24, 2014 to evaluate incident field vehicles. The evaluation isolated the source of the high resistance in the seat belt buckle pretensioner circuit to the connector between the SRS main harness and the seat belt buckle pretensioner. The report also outlines future evaluation plans including detailed evaluation of the connector components and their properties.

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10. Attachment K summarizes the laboratory testing performed by Hyundai Motor Company from August 26, 2014 through August 28, 2014 to evaluate the maximum seat belt buckle pretensioner circuit resistance value that the SRSCM can generate the specified deployment current for the seat belt buckle pretensioner (min 0.8A for 2msec). Using the “worst case” minimum battery operating supply voltage of 9 volts supplied to the SRSCM, a total of eight 8 firing loops (to simulate both front airbag first and second stage deployments plus both the seat belt retractor and buckle pretensioners) were actuated while varying one buckle pretensioner resistance value. The resistance value of remaining seven circuits remained fixed. The test results revealed that SRSCM can generate the required deployment current to the buckle pretensioner with resistance values up to 21 ohms.
11. HMC also conducted appropriate certification testing. Consistent with the analyses described above, testing consistently demonstrated compliance with FMVSS 208. Hyundai will provide such testing if requested by the agency.

Source: Hyundai Motor Company
Information as of September 10, 2014

Request 9.

Provide or discuss the following information regarding the functionality of the Supplemental Restraints System Control Module (SRSCM) and certain diagnostic trouble codes (DTCs) that pertain to the subject components:

- a. Provide the requirements or conditions for setting DTCs B1701 and B1706, and how the detection of these DTCs affects the function of the SRSCM, and/or the actuation (deployment) of the effected seat belt pretensioner;
- b. State whether or not the SRSCM will attempt to actuate (fire) the seat belt pretensioner, if warranted by conditions incurred during a crash, when DTC B1701 and/or B1706 have been detected and set in the SRSCM;
- c. Discuss how increased resistance levels in the pretensioner circuit affects whether or not the pretensioner will actuate (deploy) when commanded by the SRSCM, and state the minimum resistance that will result in a non-deployment when commanded;
- d. Provide the requirements or conditions for setting DTCs B1515, B1516, B1517 and B1518, and how the detection of these DTCs affects the function of the SRSCM, the deployment or deployment timing of the seat belt pretensioner, and/or the deployment or deployment timing of either frontal air bag;
- e. State whether or not frontal air bag deployment, frontal air bag deployment timing, or the SRSCM's decision on whether to deploy one or both stages of either frontal air bag, is in any way dependent on, or affected by, whether or not an occupant is wearing a seat belt, and if so, discuss the effect(s);
- f. State whether or not there is any scenario where a fault in the subject component(s) can result in, or cause the frontal air bag to not deploy, to deploy at a different time, or to incorrectly deploy one versus both stages, then if the fault was not present.

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Responses to Request 9.

- a. For background purposes, Hyundai has provided engineering drawings and specifications for the seat belt assemblies and SRS Control Module in Attachment L.

Attachment L has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

Diagnostic code B1701 indicates the SRS Control Module (SRSCM) has detected a resistance level in the driver seat belt buckle pretensioner circuit in excess of its nominal range. The resistance specifications for the seat belt buckle pretensioner circuit are listed in Table 1 below. If excessive resistance measurements are detected within 10 consecutive measurements, the SRSCM turns the SRS warning indicator lamp on and a corresponding diagnostic code is stored in the non-volatile memory of the SRSCM. The warning indicator lamp will remain illuminated with the ignition key in the on position and will stay illuminated until there are 20 consecutive measurements in the nominal range.

Lower limit	Grey zone	Nominal range	Grey zone	Upper limit
$1.1 \leq \Omega$	1.2-1.5 Ω	1.6 - 4.7 Ω	4.8-6.0 Ω	$\geq 6.1 \Omega$

Table 1

The diagnostic parameters for code B1706 are identical to that for code B1701, except this code indicates the SRS Control Module (SRSCM) has detected a resistance level in the passenger seat belt buckle pretensioner circuit in excess of its nominal range.

The presence of stored diagnostic codes B1701 and/or B1706 will not affect the ability of the SRSCM to detect a collision and command deployment of the pretensioners and airbags if warranted. Even if the wiring harness connector is unplugged from the seat belt buckle pretensioner, the signal from the SRSCM to deploy the seatbelt buckle pretensioner will be commanded and recorded in a collision warranting buckle pretensioner deployment.

- b. The SRSCM will attempt to actuate (fire) the seat belt pretensioner, if warranted by conditions incurred during a crash, when DTC B1701 and/or B1706 have been detected and set in the SRSCM.
- c. As described in the response to 9a, in a collision warranting the deployment of a seat belt buckle pretensioner, the SRSCM will command a deployment of the seatbelt buckle pretensioner regardless of the circuit's resistance value. Testing indicates the seatbelt buckle pretensioner will deploy with a circuit resistance up to 21 ohms. Refer to Response to Request 8, Attachment K.

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d. The referenced diagnostic codes are defined as follows:

- B1515 Driver Buckle Switch defect
- B1516 Passenger Buckle Switch defect
- B1517 Driver Buckle Switch instability
- B1518 Passenger Buckle Switch instability

To determine whether the buckle sensor is buckled or unbuckled, the SRSCM samples the buckle sensor every 50ms. The SRSCM qualifies a fault if 10 consecutive samples outside of the measured parameter’s specification occur. The SRSCM de-qualifies the fault if 20 consecutive samples of the measured parameter occur. If five consecutive samples are not measured within 20 consecutive samples, an “instability” DTC shall be qualified.

SRSCM Buckle switch determination	Open/Short to Battery	Grey Zone	Unbuckled	Grey Zone	B1515/1516	Grey Zone	Buckled	Grey Zone	Short/Short to ground
Current value (mA)	< 2.98	2.98 – 3.6	3.6 – 7.4	7.4 – 8.9	8.9 – 9.7	9.7 – 11.7	11.7 – 18.3	18.3 – 22.0	> 22.0

Table 2 –Buckle Diagnostic Current Specifications

The detection of diagnostic codes B1515, B1516, B1517, and B1518 by the SRSCM does not affect the function of the SRCSM, the deployment or deployment timing of the seat belt pretensioner and/or the deployment or the deployment timing of either frontal airbag.

- e. Frontal air bag deployment, frontal air bag deployment timing, and the SRSCM's decision on whether to deploy one or both stages of either frontal air bag are not in any way dependent on, or affected by, whether or not an occupant is wearing a seat belt.
- f. The presence of diagnostic codes B1701, B1706, B1515, B1516, B1517 and B1518 do not result in or cause: (1) the frontal air bag(s) not to deploy, (2) the frontal airbag(s) to deploy at a different time, or (3) incorrectly deploy one or both stages.

Source: Hyundai Motor Company
Information as of September 10, 2014

Request 10.

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 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;

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- 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 10.

Attachment M provides the Engineering Change Orders associated with the Sonata front seat belt buckle assembly and SRSCM.

Attachment M has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

Source: Hyundai Motor Company
Information as of September 10, 2014

Request 11.

1. State the number of each of the following 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 cut-off date for sales, if applicable):
 - a. Subject component;
 - b. Any kits that have been released, or developed, by Hyundai for use in service repairs to the subject component/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.

- a. Refer to Attachment N for requested seat belt buckle part sales by month and year. P/Ns 88830-0A000-XX (LH) and 88840-0A000-XX (RH) were applied to 2006 and 2007

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models produced through March 6, 2007. From March 7, 2007 P/Ns 88830-0A001-XX (LH) and 88840-0A001-XX (RH) with a double-lock connector were applied through the 2008 model year of the subject vehicles.

- b. There have not been any kits that have been released, or developed, by Hyundai for use in service repairs to the subject component/assembly.

Seat Belt Buckle supplier for US market:

Supplier Name: TK Holdings
Address: 2500 Takata Drive Auburn Hills, MI 48326 USA
Contact Person: Steven Choi
Title: Hyundai/Kia CBU Department Manager
Phone Number: 248-475-6706

No other vehicles contain the identical component.

Source: Hyundai Motor America
Hyundai Motor America
Information as of September 10, 2014

Request 12.

1. 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; and
 - e. 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
 - f. The reports included with this inquiry.

Response to Request 12.

Testing and analysis to date reveals that when the SRS Control Module (SRSCM) has detected a resistance level in the driver or passenger seat belt buckle pretensioner circuit in excess of its nominal range, the airbag warning light illuminates and related diagnostic codes are stored. The presence of these stored diagnostic codes does not affect the ability of the SRSCM to detect a collision and command deployment of the pretensioners and airbags when warranted. Excess resistance in the connector causes the lamp to illuminate, but does not impact the functionality of the airbags. HMC conducted testing to determine the maximum resistance before the pretensioner may not actuate, and that resistance value is 2-3 times higher than any resistance value found in the field. Information to date suggests that while an actuation failure may be theoretically possible under laboratory conditions, those

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conditions are not present in the field and, accordingly there is no safety risk. When the resistance reaches 6.1 ohms, the airbag light illuminates so that the owner is informed that the resistance is beyond specified limits and the system should be checked.

Hyundai's evaluation continues. The company will update its response once its evaluation is complete.

Sincerely,



Steve Johnson
Director, Engineering and Design Analysis

Attachments:

Two CDs, each containing:

PE14-023 PRODUCTION.accdb
PE14-023 REQUEST NUMBER TWO DATA.accdb
PE14-023 WARRANTY DATA.accdb
PE14-023 WARRANTY CODES.xlsx
PE14-023 BUCKLE SALES DATA.xlsx
Attachment A
Attachment B
Attachment C
Attachment D
Attachment E
Attachment F
Attachment G
Attachment H
Attachment I
Attachment J
Attachment K
Attachment L
Attachment M
Attachment N