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OFFICE OF DEFECTS
INVESTIGATION

February 11, 2005

VIA FEDERAL EXPRESS

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

Re: Engineering Analysis (EA04-030)
MY 2001 Kia Optima; Power Door Locks

Dear Ms. DeMeter:

This letter is submitted in response to your letter of December 17, 2004 sent to Hyundai America Technical Center, Inc. ("HATCI") (Reference NVS-2121ha/EA04-030). That letter requested additional and updated information regarding the functioning of the electrically-powered lock mechanisms installed in the doors of model year (MY) 2001 Kia Optima vehicles. Although HATCI is an organization independent of both Kia Motors Corp. ("KMC") and Kia Motors America, Inc. ("KMA"), it has been designated by those organizations to act as their communication liaison with the National Highway Traffic Safety Administration ("NHTSA"). This response is submitted to NHTSA by HATCI in that limited role.

REQUEST NO. 1:

Update to current status and state the number of each of the following, received by Kia, or of which Kia is otherwise aware, which relate to or may relate to, the alleged defect in the subject vehicle:

- a. Consumer complaints, including those from fleet operators;
- b. Field reports, including dealer field reports;
- c. Reports involving a fire, crash, injury, or fatality, based on claims against Kia involving a death or injury, notices received by Kia alleging or proving that a death or injury was caused by a possible defect in subject vehicle, property damage claims, consumer complaints, or field reports;
- d. Property damage claims;

- e. Third-party arbitration proceedings where Kia is or was a party to the arbitration; and
- f. Lawsuits, both pending and closed, in which Kia is or was a defendant, codefendant, or third party defendant.

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 underlying problems, casual and contributing factors, and Kia's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "c" 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 NO. 1:

The table below provides a comprehensive summary of information previously and currently submitted. The types of consumer complaints include doors locking/unlocking automatically, door locks working intermittently and door lock concern. The data submitted with this response was obtained on January 27, 2005.

CATEGORY	PE04-050 09/03/04	EA04-030 02/11/05	TOTAL
Consumer Complaints	266	32	298
Field Reports/Tech Center Case Reports	40 ¹	2	42
Crash Reports	0	0	0
Property Damage Claims	2	0	2
Third Party Arbitrations	0	0	0
Lawsuits	0	0	0

The summary descriptions requested in your letter are attached. See Tab 1.

REQUEST NO. 2:

Separately, for each item (complaint, report, claim, notice or other matter) within the scope of your response to Request No. 1, state the following information:

¹ This is the total number of Field Reports and Technical Assistance Case Center Reports which should have been identified in response to PE04-050 on September 3, 2004. We are listing that number here to keep the activity chronologically current. Although the proper search was reported as having been conducted, certain reports were not pulled out of the database. Additional employee training has been conducted to prevent this from reoccurring. We are submitting copies of these overlooked documents with this response.

- a. Kia's file number or other identifier used;
- b. The category of the item, as identified in Request No. 1 (i.e., consumer complaint, field report, etc.);
- c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
- d. Vehicle Identification Number (VIN);
- e. Vehicle make, model and model year;
- f. Vehicle's mileage at time of incident;
- g. Incident date;
- h. Report or claim date;
- i. Whether a fire is alleged;
- j. Whether a crash is alleged;
- k. Whether property damage is alleged and if so, the type of property damage;
- l. Number of alleged injuries, if any and the type of injury alleged;
- m. Whether medical attention was sought, the medical result/diagnosis; and
- n. 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 NO. 2:

A listing of the consumer communications is provided on a Data Collection Disc under the category "REQUEST NUMBER TWO DATA".

REQUEST NO. 3:

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 Kia used for organizing the documents.

RESPONSE TO REQUEST NO. 3:

Copies of the documents identified in response to Request No. 2 are submitted with this letter. See Tab 2. They are organized by the following categories:

- Consumer Affairs Department files from KMA's department data base, along with Warranty History Inquiry reports (32).
- Field Reports (0)
- Technical Center Assistance Case Reports (2)
- Lawsuits (0)

REQUEST NO. 4:

Update the current status and state the numbers of all of the following categories of claims, collectively, that have been paid by Kia 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. Kia's claim number;
- b. Vehicle owner or fleet name (and fleet contact person) and telephone number;
- c. Vehicle Identification Number
- d. Repair date;
- e. Vehicle mileage at time of repair;
- f. Repairing dealer's or facilities' 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".

RESPONSE TO REQUEST NO. 4:

A listing of the responsive warranty claims is provided on a Data Collection Disc under the category "WARRANTY DATA". Kia is submitting updated warranty claim data for the following components:

Specific Component	Total Number of Claims PE04-050 09/03/04	Additional # of Claims Reported in this Response	Total Number of Claims EA04-030 02/11/05
Warranty Data_81310: Driver Side Latch Assembly	3838	602	4440
Warranty Data_95730: Driver Side Actuator Door Lock	1842	289	2131
Warranty Data ETACS 2001	564	81	645
Warranty Data Receiver 2001	276	15	291
Warranty Data Transmitter 2001	947	81	1028

Warranty Data Wiring Harness 2001	333	37	370
Warranty Data MicroRelay2 2001	54	3	57

REQUEST NO. 5:

Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that Kia 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 communications that Kia is planning to issue, or considering issuing within the next 120 days.

RESPONSE TO REQUEST NO. 5:

There are no documents responsive to this request.

REQUEST NO. 6:

Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiring and/or evaluations (collectively, "actions") that have been conducted, are being conducted, are planned, or being planned by, or for Kia, that relate to, or may relate to the alleged defect, and not previously reported to ODI under PE04-010. For each action or category, 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.

RESPONSE TO REQUEST NO. 6:

No additional testing or assessments have been conducted other than what was previously submitted in response to PE04-050.

REQUEST NO. 7:

Identify any and all service repair parts kits developed and released for production by or for Kia that relate, or may relate, to the alleged defect in the subject vehicles. Include all service kit part numbers and for each such part number, state the date of first shipment to dealers, the number of kits sold, and a complete engineering description of each individual part within that kit.

RESPONSE TO REQUEST NO. 7:

No service repair parts kits have been developed and released for production by Kia.

REQUEST NO. 8:

Define the acronym "ETACS," referred to in Kia's response to ODI's inquiry submitted under PE04-010, and state its specific function(s) as a part of the electric door lock system installed in the subject vehicle.

RESPONSE TO REQUEST NO. 8:

The term "ETACS" stands for Electronic Time & Alarm Control System. The ETACS module receives input signals from various components which are then converted to outputs depending on the function involved. For example, when the hood is lifted, the ETACS module receives an input signal and then sends an output to turn on the hood open warning light.

A review of the ETACS warranty claim data identifies the ETACS system has been repaired/replaced for a range of reasons (e.g., inoperable remote key, inoperable interior lights including dome and vanity lights, air bag light on).

In order to provide a better understanding of the range of ETACS functions, we are submitting with this response various diagrams which are intended to achieve that goal. See Tab 3.

REQUEST NO. 9:

In consideration of any additional information accumulated and evaluated in the preparation of Kia's response to this letter, furnish an update of Kia's assessment of the alleged defect in the subject vehicles, including:

- a. The casual or contributory factor(s);
- b. The failure mechanism(s);
- c. The failure mode(s);
- d. The risk to motor vehicle safety that is poses; and
- e. The reports included with this inquiry.

RESPONSE TO REQUEST NO. 9:

Kia's assessment of the alleged defect submitted in its prior response is consistent with the new claims and complaint information submitted with this letter. Thus, the responses to a-d remain valid.

- a. **Causal or contributory factors for door latch mechanical and electrical actuator problems:** The relevant factor is the deterioration of the rubber pawl stopper in the driver's door latch. (See Kia's supplemental response to PE04-050 dated October 1, 2004).

- b. **The failure mechanism for such malfunction:** The rubber pawl latch stoppers for the 2001 Optima had a composition which deteriorated over time and use, failing to maintain the rubber's strength and flexibility. Eventually, the rubber stopper failed to properly position the door latch pawl lever and the location of the actuator switch contact point became unstable. Unstable in this sense means that the sensor would variously provide lock and unlock signals to that door's actuator. (See Kia's supplemental response to PE04-050 dated October 1, 2004).
- c. **The failure mode for such malfunction:** The door latch pawl lever interfered with the control lever due to the deterioration of the rubber pawl stopper. This then mispositioned the actuator switch in the operational borderline between LOCK and UNLOCK. In this unstable position, the actuator switch eventually could send a "lock" message to the actuator, locking all four doors with the auto-lock function. Due to the deteriorated condition of the rubber stopper, a subsequent attempt to unlock the system would in fact unlock the doors, but it could also return the actuator switch to an unstable position. Assuming that the actuator switch then read that lever was in the LOCK position, after about a second the switch could signal the actuator that it was in the lock position, and then the ETACS would again relock all four doors. (See Kia's supplemental response to PE04-050 dated October 1, 2004).
- d. **The risk to motor vehicle safety posed by power door lock malfunction:**

The door lock issues which are under analysis are quality issues, but they are not safety issues which constitute an unreasonable risk to highway safety.

In the introduction to this section, we identify problems which patently have no safety element: a mechanical failure of a door latch, an electronic failure of a transmitter or receiver, a failure of a major electronic component of a door locking component; or an ETACS problem. In each case, the inability to leave the vehicle is temporary and/or transitory.

The combined mechanical/electrical locking phenomenon was more complex than the other problems and harder to pin down. It was initiated by the deterioration of the door latch rubber pawl and culminated in a lock signal to that door's actuator, thus initiating the auto-lock function through the ETACS to all four doors.

From an analytical engineering standpoint, KMC has confirmed that the described sequence of events in fact does not trap the occupants in the car, but that they are instead able to exit the vehicle by the use of any one of the three non-affected doors. Specifically, KMC's testing established that the non-affected front door would open by operating the door switch and the manual door lock knob.

An analysis of the consumer and VOQ files provides ample additional evidence that the vehicle occupants were in fact able to exit their vehicles, even when they

loosely stated they were "trapped". The one exception to this is discussed in the VOQ section. This conclusion has been confirmed in follow-up consumer interviews.

KMA's review and analysis provides a strong reference that, when a customer uses the term "trapped", they are in fact identifying that door did not unlock in its normal fashion. However, the customers are not "trapped" from a safety standpoint, because they can exit the vehicle.

As KMC's analysis shows, the customers always had the opportunity to go to another door and operate the door switch and manual locking knob. In addition, the customer records and interviews show that the occupants identify a numerous series of exit methods, including: 1) "playing with" the locked driver's door until it opened; 2) consciously taking advantage of the delay between unlocking the door and the engagement of the auto-lock function, by using the switch or knob and pulling on the door handle to open the door; 3) lowering the driver's window and opening the door from the outside with a key; 3) exiting through the front passenger door; 4) exiting through the rear doors, and 5) exiting through the window opening. In addition, 6) some more creative customers took advantage of modern vehicle design to pull down the rear seats and use the luminescent trunk release to exit through the trunk area.

Information obtained from customers who complained about their door locks to the Consumer Affairs Department is consistent with this interpretation. Specific examples of how customers were able to get out of their vehicle include:

- Out through front passenger-side door after playing with the lock and handle;
- Rolled window down and used key to open door from outside;
- Went past console and got out through front passenger side door;
- Drove to dealership where they rolled down windows to get customer out;
- Drove to dealership where they had customer roll down window and they pushed the manual lock knob for the customer;
- Played with lock and eventually doors unlocked;
- Customer had to open the door with door key, not remote;
- Hit the lock/unlock button until door would unlock; other time door locked, customer got out through the passenger door;

- Starting the engine would cause doors to unlock;
- Jiggling the key in the door lock and lifting the handle;
- Hit the unlock buttons a couple times before it would stay unlocked;
- Crawled out front passenger window;
- Used the remote;
- Restarting the car and doors would unlock;
- Jiggled the key in the outside door lock; and
- Crawl out of rear of vehicle through the trunk.

(See Kia's supplemental response to PE04-050 dated October 1, 2004).

In further response to subsection (d), Kia believes that the additional information submitted with this response, provides consistent further evidence of the absence of a safety related defect trend in the 2001 Kia Optima door locks or an unreasonable risk to highway safety. In particular, the additional consumer affairs files, field reports and technical assistance case center reports demonstrate the absence of any safety concerns by customers, KMA technical personnel and dealer technicians. It is noteworthy, for example, that one consumer identified that a solution to the problem was to "open window and pull outside handle to open door". Similarly, another customer identified he had to "play with the lock" in order to unlock the door.

c. Reports included with this inquiry: No VOQ's were included with this inquiry.

The mechanical issue was well described in Kia's response to PE04-050. The two pages of that response which most directly explains this mechanical issue are attached. See Tab 4.² The auto-lock issues which were identified by the customers are merely a visible result of that mechanical problem. Critically, as indicated above, the auto-locking does not prevent customers from exiting the vehicle and can be accomplished by simply playing with the locks, lowering the driver's window and pulling on the door from the outside with a key, exiting through the front passenger door, exiting through the rear doors or exiting through the window opening.

² These documents were granted confidential treatment by Otto Matheke of the Office of Chief Counsel on January 5, 2005 as they were previously submitted as part of Tab 1 of Kia's supplemental response to PE04-050 on October 1, 2004.

Kathleen C. DeMeter, Director

February 11, 2005

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KMA believes that this response provides the necessary information to close this investigation. However, if you or your staff, would like to have a meeting so that the relevant door lock control functions can be demonstrated by Kia, we would be glad to do so at your convenience.

Sincerely yours,



Alfred Gloddeck

Sr. Manager—Corporate Affairs