

INFORMATION Redacted PURSUANT TO THE FREEDOM OF  
INFORMATION ACT (FOIA), 5 U.S.C. 552(B)(6)

OFFICE OF DEFECTS &  
INVESTIGATIONS

2010 OCT 15 A 11:36



September 17, 2010

**VIA FEDERAL EXPRESS**

D. Scott Yon, Chief  
Vehicle Integrity Division  
Office of Defects Investigation  
U.S. Department of Transportation  
National Highway Traffic Safety Administration  
1200 New Jersey Avenue, S.E.  
Washington D.C. 20590

Re: **Preliminary Evaluation (PE10-023)**  
**Fuel Expulsion and/or Fuel Flow Restriction (MY) 2003 Kia Sorento**

Dear Mr. Yon:

On behalf of Kia Motors Corp. ("KMC") and Kia Motors America, Inc. ("KMA"), Hyundai America Technical Center, Inc. ("HATCI") submits Kia's supplemental response to Request Nos. 9 and 11, and provides additional information in response to Request No. 8, of your letter dated July 14, 2010 (Reference NVS-212lhs/PE10-023) pursuant to the extension granted on August 19, 2010. Although HATCI is an organization independent of both KMC and 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 on behalf of KMC and KMA by HATCI in that limited role.

**REQUEST NO. 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 Kia. 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 interim, draft, or final form. Organize the documents chronologically by action.

Hyundai-Kia America Technical Center Inc.  
6600 Geddes Road, Superior Township, MI 48198  
TEL: 734-337-9499 FAX: 734-483-5919  
[www.hatci.com](http://www.hatci.com)

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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.

**RESPONSE TO REQUEST NO. 8:**

During the development of the subject vehicle as well as during its 5 year/60,000 mile warranty history, none of the identifiable components of the fueling system in the 2003 Sorento indicated any engineering condition which might be a defect leading to fuel spitback. Since this model was out of warranty and therefore most vehicles were outside the normal observation of Kia dealers, KMC's preliminary analysis concluded that the primary regular maintenance component in the system—replacement of the evaporative air filter—would be a likely source of any actual spitback events. KMC therefore tested the effect of inadequate air filter maintenance on the system and concluded that such inadequate maintenance was the likely cause of such events. As part of the process of reevaluating the entire system, KMC also evaluated whether the non-maintenance components of the fuel system could reach any condition—whether related to the real world or not—where they could cause spitback. The results of those evaluations and when spitback could be forced elsewhere in the system are also identified in the report.

- a. 2003MY Sorento Fueling Evaluation Report.
- b. September 6, 2010
- c. September 15, 2010
- d. To test the effect of inadequate maintenance on the evaporative air filter and to perform forced defect component testing in the fuel system for the 2003 Kia Sorento.
- e. KMC Quality Assurance Team 1
- f. KMC concluded the following:
  - Although air filter performance always depends on the ambient air conditions to which it is exposed, KMC preliminarily determined that there was nothing in the 8 year history of this vehicle to indicate that the design of the air filter was a source of any spitback issue. KMC's testing then showed that when placed in an 83% or 92% blocked condition, spitback could occur. These are extreme blockage conditions which indicate that, if the customer drives the vehicle over a prolonged period of time in relation to local ambient air conditions, spitback can potentially occur.
  - The Roll-Over Valve cannot be forced to create a spitback condition.
  - A complete blockage of the ORVR valve or the CCV can immediately force spitback in the system regardless of the fill level. Although these are not real world conditions identified in relation to those components, such results support the concept that a sufficiently blocked air filter can cause spitback.

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- Although also not a real world condition, by removing the non return valve spring, spitback can also occur when a sufficiently high fill level (96%) is reached.

See Tab 1.

**REQUEST NO. 9:**

Provide a complete engineering description and appropriate engineering specifications of the subject component installed in the subject vehicles, specifically including all components that provide for, or that may restrict, the free flow of fuel during refueling. Identify by MY, make, and model, all other vehicles equipped with identical subject components, manufactured for sale or lease by Kia in the United States. For each other MY, make and model of vehicles equipped with identical subject components, provide separate counts of the numbers of consumer complaints, field reports, and warranty claims received by Kia to date.

**RESPONSE TO REQUEST NO. 9:**

Other Kia vehicles with the same air filter as the 2003 Kia Sorento are the 2004MY Kia Sorento and the 2002MY-2005MY Kia Sedona. Kia is also providing the warranty claims for those Kia vehicles that have the same fuel tank and filler neck as specified in the IR letter.

## a) Warranty Claim Data

|              | Air Filter | Fuel Tank | Filler Neck |
|--------------|------------|-----------|-------------|
| 2004 Sorento | 116        | 95        | 58          |
| 2002 Sedona  | 262        |           |             |
| 2003 Sedona  | 83         |           |             |
| 2004 Sedona  | 107        |           |             |
| 2005 Sedona  | 103        |           |             |

## b) Other Field Data

|              | Consumer Complaints | Field Reports | Technical Assistance Case Center Reports |
|--------------|---------------------|---------------|--|
| 2004 Sorento | 8                   | 0             | 14                                       |
| 2002 Sedona  | 24                  | 1             | 14                                       |
| 2003 Sedona  | 11                  | 0             | 15                                       |
| 2004 Sedona  | 19                  | 0             | 17                                       |
| 2005 Sedona  | 12                  | 0             | 24                                       |

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**REQUEST NO. 11:**

Provide Kia's assessment of the alleged defect in the subject vehicles, 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. 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 NO. 11:**

- a. **Causal or contributory factors for fuel expulsion and/or abnormal restriction in the free flow of fuel.** Improper maintenance of the evaporative air filter.
- b. **The failure mechanism for fuel expulsion and/or abnormal restriction in the free flow of fuel.** Over an extraordinarily long period of time for the ambient air conditions, the fuel system's air filter is not replaced and the filter openings slowly fill up and restrict air flow past the filter. Although the filter exists to prevent dirt from being pulled into the system during purging, air also moves past the filter during the refueling process and blockage can thus impact the system.
- c. **The failure mode for fuel expulsion and/or abnormal restriction in the free flow of fuel.** In the normal case, after a period of time where refueling will become increasingly difficult, eventually blockage will be sufficient to potentially result in spitback. It is unclear what the exact confluence of factors is which will lead to an actual spitback event, but it is believed to be rare.
- d. **The risk to motor vehicle safety that it poses.** Customer exposure to fuel is always a concern to Kia and its dealers are well trained to ensure that proper maintenance is recommended to customers and performed as authorized. As a result, Kia does not believe that this condition is a risk to vehicles to which its dealers are connected. Kia however cannot directly influence non-Kia service centers nor can it substitute its judgment for the individual responsibilities of vehicle owners. Kia will send out a TSB reminding service providers to replace the air filter as part of regular maintenance. Independent service providers who check the TSBs will then also have access to this reminder.
- e. **What warnings, if any, the operator and other person persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning.** Any customer is periodically reminded of their need to conduct regular maintenance on their vehicle and thus the 2003 Sorento owner will have many prompts to obtain

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maintenance which will also address this issue. As additional road dirt blocks the filter openings, the customer will receive information in the form of reduced fueling efficiency and be prompted to seek service.

- f. **The reports included with this inquiry.** The analysis of the eight (8) VOQs included with this inquiry are attached. See Tab 2.

Sincerely,

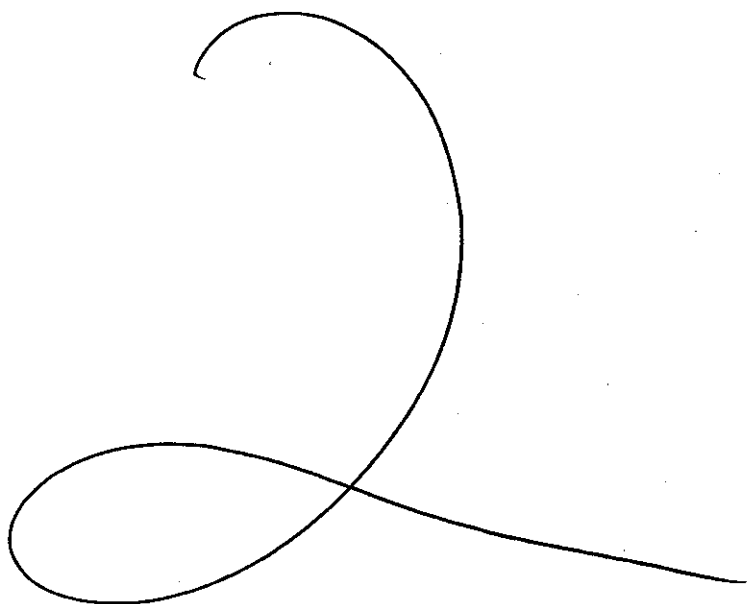


Robert Babcock

Senior Manager, Regulation and Certification Department

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**CONFIDENTIAL DOCUMENTS**





## **VOQ Analysis**

### **Response to Request No. 11(f)**

**1. VOQ No. 10321916, 03/25/10 (VIN KNDJD733435 [REDACTED])**

"When fueling my 2003 Kia Sorento the gas will spew back out (as if under pressure) onto me, the vehicle and the surrounding area. This is a fire hazard. This happens every time I try to put gas into the Sorento. The dealership said they could not identify the problem without a costly diagnostic test. They did 'look' at the fuel line and could not see a problem. The only way to prevent the gas from spewing is to put the gas in extremely slowly. Filling it slowly seems to prevent the pressure build up that causes the gas to spew. The spewing gas is causing the paint on my vehicle to peel."

Kia contacted the customer on September 15, 2010. Customer purchased the vehicle used and had owned the vehicle for 4 years before she began experiencing fuel spitback issues. Customer stated she advised the Kia dealership about her fueling issue and the dealer could not identify any problems without performing a diagnostic test. Customer declined to have the diagnostic test recommended by the dealer. Customer continues to experience fueling issues but has not taken her vehicle either to a Kia dealership or an independent repair mechanic for a thorough inspection in order to determine the potential cause of her fueling issues.

the customer has refused to maintain the vehicle as recommended as she has been repeatedly advised to do. She has instead learned to manage the fuel flow through slow refueling.

**2. VOQ No. 10291000, 11/04/09 (VIN KNDJD733835 [REDACTED])**

"This is the third time this incident happened. During the last time, the gas gauge showed that the tank have less than 1/8 full when I started to pump gasoline to the vehicle's tank, the gas pump abruptly stopped as if the vehicle's gas tank is already full and gasoline splashed back out of the tank. Gasoline sprayed all over including myself. I cautiously started to pump gas to the vehicle again and the same thing happened. I smelled like gasoline and ruined my clothes."

Kia contacted the customer on September 8, 2010. Customer had done internet research and concluded his ORVR valve had broken. Customer denies any prior refueling difficulties. Customer purchased the vehicle new in January 2003 and first began experiencing refueling issues in September 2009. Customer took the vehicle to the dealership where the canister assembly, CCV and air filter were replaced on January 18, 2010. Customer says the dealership told him the problem was due to "overfilling" causing charcoal to get stuck in the system. Customer has not experienced any fueling issues since the repair was done.

Assuming the accuracy of the customer's statement based on the tank being 1/8 full with no prior issues when the incident occurred, a complete blockage (100%) of some component had to have occurred suddenly.

**3. VOQ No. 10290609, 11/2/09 (VIN KNDJD733735 [REDACTED])**

"MY 2003 Sorento, made 10/12/08 [sic], does not take gas well. When you fill it, it pressurized and blows gas back at you. This is an ongoing failure and safety issue. A mechanic says he needs a different fuel tank assembly and valve to correct the problem."

Kia contacted customer on August 13, 2010. Issue started in about October 2009. Customer did not want to go to the dealer for repair, since the vehicle was out of warranty, and so customer was hoping there was some recall or service campaign. Ultimately, the vehicle was taken to an independent repair shop and the charcoal canister was replaced as a result of it being saturated. Customer is no longer experiencing any fueling issues.

Kia believes the original issue was caused by a lack of maintenance on the air filter. The saturated of the charcoal canister was derivative of that over a prolonged period of time.

**4. VOQ No. 10289298, 10/21/09 (VIN KNDJC733735 [REDACTED])**

"When I attempt to fill the gas tank in my 2003 Sorento, the gasoline blows back at me. This happens every time I add gas. If I am not careful it gets on my clothing, shoes, outside of my vehicle and on the ground. The dealership has quoted that a repair would cost between \$650.00 and \$850.00 to fix it although they cannot tell me for sure what the problem is. I cannot afford to have this repaired."

Kia contacted the customer on September 2, 2010. Customer purchased the vehicle used in 2005 and first began to experience refueling issues in January 2009. Customer took the vehicle to the dealership in November 2009 for this issue. Customer was concerned the dealer was not being truthful about the repair and had the vehicle repaired at Tuffy Auto Center. The charcoal canister, CCV and air filter were replaced. Following the repair, customer no longer experienced any refueling issues. Customer no longer owns the vehicle due to her financial condition.

Kia believes that the replacement of the air filter resolved any issues.

**5. VOQ No. 10267355, 4/30/09 (VIN KNDJC733435 [REDACTED])**

"Gas spews out while trying to refuel. Doesn't matter if it's almost empty or half full. Gets all over the car, ground and me. Have to dribble fuel in tank and takes 15 min. just to put a 1/4 tank in. I don't like smelling of gas and being a walking fire hazard."

Kia contacted the customer on August 13, 2010. Customer bought the vehicle used in 2005 or 2006 and began experiencing fuel spitback in early 2009. On April 9, 2009, the dealer replaced the CCV and the air filter. Customer continued to have refueling issues. Customer removed the charcoal pellets from the canister and put it back on the vehicle. Customer has no further issues.

Kia believes breakdown of the charcoal canister was caused by failure to maintain the air filter. This failure also intervened with the purge function. By the time the air filter was replaced, the canister charcoal was saturated.

**6. VOQ No. 10241464, 9/09/08 (VIN KNDJC733435 [REDACTED])**

"... While placing fuel into the vehicle, the fuel spewed back out from the gas pump. ... [I]t would take ten minutes to place \$20 worth of gas into the vehicle. He had to place small quantities of fuel into the vehicle at a time to prevent it from spewing back out. An independent mechanic replaced the fuel tank pressure relief valve at the cost of \$191, however the failure persists. The manufacturer was unable to provide any assistance. The failure mileage was 82,000 and current mileage was 85,000."

Kia contacted the customer on September 3, 2010. Customer purchased the vehicle used approximately 3 years ago. Customer could not recall when he first began to experience problems with refueling. Customer initially took the vehicle to an independent repair shop for this issue but the repair did not fix the concern. We assume this was the "tank pressure relief valve" repair described by the customer. Customer took the Sorento to the dealer on September 8, 2009 and the canister assembly was replaced. Customer stated he has not experienced any further issues.

Customer's limited information about the vehicle's maintenance makes this difficult to analyze. Kia assumes the air filter was not replaced and after a prolonged period, lead to canister saturation.

**7. VOQ No. 10225550, 4/23/08 (VIN KNDJD733635 [REDACTED])**

"2003 Kia Sorento. Gas tank will not fill and when attempting to fill the car will spew gas on to the consumer and all over the car and surrounding area creating a potential fire hazard. According to Kia, I have to replace the entire gas tank assembly because it's defective. For now I have to pump the gas in extremely slowly and it takes approximately 12 times longer than normal."

The language of the VOQ complaint is identified to the language in the VOQ identified in No. 8 (Cadiente) but here it does not apply to the facts and this was erroneously duplicated here. Kia contacted customer on August 11, 2010. Customer's father in law purchased the vehicle new in February 2003. Kia's records show the vehicle had 82,000 in September 2007 when an unrelated recall repair was performed. Customer began to experience fuel issues in December 2007. The vehicle was taken to the dealer in April 2008 and customer's father-in-law was told there "was some flap that was shutting during refueling". Customer could not recall actual repair done but stated the repair resolved the fuel spitback issue. KMA has no record of the repair.

Other than to note that this vehicle had been heavily used and was 30,000 miles out of warranty when the issue appeared, Kia does not have sufficient information to make analysis.

**8. VOQ No. 10203356, 9/18/07 (VIN KNDJD733835 [REDACTED])**

"2003 Kia Sorento. Gas tank will not fill and when attempting to fill the car will spew gas on to the consumer and all over the car and surrounding area creating a potential fire hazard. According to Kia, I have to replace the entire gas tank assembly because it's defective. For now I have to pump the gas in extremely slowly and it takes approximately 12 times longer than normal."

According to vehicle records, customer never had a problem "during years of owning the car". The problem first appeared just after warranty. Customer took the vehicle to a dealer he had never been to. Later indications were that the customer never had maintenance performed. The vehicle's ORVR valve was replaced on August 16, 2007. Customer returned to dealer on August 28, 2007 for same concern. Dealer recommended replacement of fuel tank assembly. According to the CA records, customer was upset at having to pay for a fuel tank replacement just 100 miles out of warranty. Dealer offered to split costs of the repair if customer would agree to perform the required maintenance which had been neglected. Customer refused to have maintenance conducted.

Kia has been unable to contact get a hold of this customer. However, the records both show neglected maintenance and an aggressive lack of belief in maintenance by the customer. Kia believes this is clearly an air filter issue, possibly compounded by other maintenance issues.