



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

ODI RESUME

Investigation: EA 12-008
Prompted by: PE12-012
Date Opened: 09/13/2012
Investigator: Michael Lee
Approver: Frank Borris
Subject: Headliner Bracket Detachment

Date Closed: 12/09/2013
Reviewer: Scott Yon

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Hyundai Motor Company
Products: 2011-2013 Hyundai Elantra (built in Korea)
Population: 186,254

Problem Description: During a side-impact crash, a metal support bracket attached to the headliner may be displaced downward by a deploying side curtain air bag. The edge of the metal bracket may cause a laceration injury to an occupant seated near the bracket.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	1	1	1**
Crashes/Fires:	0	0	0
Injury Incidents:	1	1	1**
Number of Injuries:	1	1	1**
Fatality Incidents:	0	0	0
Other*:	3	0	3

*Description of Other: Field incidents found in salvage yards.

** Total eliminates duplicates received by ODI and manufacturer.

ACTION / SUMMARY INFORMATION

Action: This Engineering Analysis is closed (NHTSA recall no. 13V-115).

Summary:

In March 2013, Hyundai issued a safety recall to reinforce the attachment of the metal support brackets to the headliner assembly in approximately 186,254 model year 2011-2013 Hyundai Elantra vehicles built in Korea and sold in the U.S. (see NHTSA recall 13V-115 for more information). The recall covers vehicles built up to March 5, 2013. After that date, Hyundai began using headliners with reinforced bracket attachments in the Korea-built Elantra vehicles.

ODI has opened a Recall Query (RQ13-004) to investigate model year 2009-2012 Hyundai Elantra Touring vehicles. During EA12-008, ODI found these vehicles are equipped with a support bracket design and layout similar to that in the above-mentioned Elantra vehicles. Also, the headliner manufacturing processes used were similar for both models. Like the Elantra vehicles built before the recall, the Elantra Touring model headliner does not contain reinforced bracket attachments.

This Engineering Analysis is closed. See attached report for additional information.

The ODI report cited above can be reviewed online at <http://www-odi.nhtsa.dot.gov/owners/SearchNHTSAID> under the following identification number: 10457696

EA12-008

Additional Information

In May 2012, ODI received a Vehicle Owner's Questionnaire (VOQ) report alleging an improper deployment of the driver-side side curtain air bag in a model year (MY) 2012 Hyundai Elantra (field incident). The side curtain air bag had deployed as a result of a crash. The report alleged that during the crash and air bag deployment, a metal bracket came down from the headliner and caused an ear laceration.

In late May 2012, ODI and Hyundai inspected the complaint vehicle and confirmed the deploying side curtain air bag caused the metal bracket to be displaced downward.

In May 2012, ODI opened a Preliminary Evaluation (PE12-012). During that investigation, Hyundai explained that the MY 2011-2013 Hyundai Elantra vehicles built in Korea share the same headliner design that utilizes support brackets. These metal support brackets are attached to the roof-side of the headliner by adhesives and are located along the side edges of the headliner, extending from about the sun visor to the mid-point of the rear seat. Hyundai stated the support brackets provide increased structural rigidity of the headliner and head impact force distribution. The MY 2011-2013 Elantra vehicles built in the U.S. are equipped with a different (thicker) headliner that does not use support brackets.

This Engineering Analysis (EA12-008) was opened in September 2012 in order to further assess whether incidents like the single field incident could potentially occur with other Elantra vehicles.

Throughout the course of ODI's investigation until early February 2013, Hyundai stated it was not aware of any other incidents similar to the VOQ reported field incident on the subject vehicles. It also stated that a review of the headliner assembly process and inspection and test results indicated the field incident is an isolated incident.

In late January 2013, ODI identified two subject vehicles in salvage yards that appeared to show failure conditions similar to the field incident (i.e., detached metal bracket with curtain air bag deployment). One vehicle was a MY 2012 Elantra and the second was a MY 2013 Elantra. ODI informed Hyundai about these two vehicles and requested NHTSA's Special Crash Investigation (SCI) division to inspect the vehicles. SCI's preliminary findings confirmed the failures were identical to the field incident.

After learning about the additional field incidents, Hyundai conducted more testing and analysis that showed certain subject vehicles could have a partially dislodged metal bracket condition. All three known field incident vehicles were equipped with electronic auto-dimming rear view mirrors that had been installed at the U.S. ports where the subject vehicles were received. Hyundai reported the support bracket could become partially dislodged during the installation of these mirrors, causing the bracket to be displaced by a deploying side curtain air bag.

This investigation revealed those subject vehicles not equipped electronic rear view mirrors may also have an inadequate bracket attachment condition. NHTSA's inspections of the headliner assemblies from two such subject vehicles showed the forward portion of the bracket was not adequately attached to the headliner during manufacture. Both vehicles were MY 2012 Elantra vehicles and each was used as a test vehicle by the New Car Assessment Program (NCAP) and Vehicle Research and Test Center. (It should be noted that the NCAP vehicle's side curtain air bag deployed and the support bracket did not displace.)

Then, in June 2013, ODI identified a subject vehicle not equipped with an electronic rear view mirror in a salvage yard that appeared to show a failure condition similar to the field incident. It should be noted that the safety recall issued by Hyundai in March 2013 (NHTSA recall 13V-115) covers all of the subject vehicles in the U.S.—both vehicles with and without the electronic rear view mirrors.