

**RECEIVED**

By Recall Management division at 9:39 am, Feb 25, 2014

February 24, 2014

Ms. Nancy Lewis  
Associate Administrator for Enforcement  
National Highway Traffic Safety Administration  
Recall Management Division (NVS-215)  
1200 New Jersey Avenue, SE – Room W45-306  
Washington, DC 20590

Re: NHTSA Notification Campaign No. 14V-047

Dear Ms. Lewis:

This letter supersedes General Motors' letter of February 7, 2014, and is submitted pursuant to the requirements of 49 CFR 573.6 as it applies to a determination by General Motors to conduct a safety-related recall for 2005-2007 model year Chevrolet Cobalt and 2007 model year Pontiac G5 vehicles. Specifically, the information submitted pursuant to 49 CFR 573.6(c)(5) and 573.6(c)(6) below supersedes information included in General Motors' letter of February 7, 2014.

573.6(c)(1): General Motors Company; Chevrolet and Pontiac Brands.

573.6(c)(2),(3),(4): This information is shown on Attachment A.

573.6(c)(5): General Motors has decided that a defect which relates to motor vehicle safety exists in 2005-2007 model year Chevrolet Cobalt and 2007 model year Pontiac G5 vehicles. The ignition switch torque performance may not meet General Motors' specification. If the torque performance is not to specification, the ignition switch may unintentionally move from the "run" position to the "accessory" or "off" position with a corresponding reduction or loss of power. This risk may be increased if the key ring is carrying added weight or the vehicle goes off road or experiences some other jarring event. The timing of the key movement out of the "run" position, relative to the activation of the sensing algorithm of the crash event, may result in the airbags not deploying, increasing the potential for occupant injury in certain kinds of crashes.

Until the recall repairs have been performed, it is very important that customers remove all items from their key rings, leaving only the vehicle key. The key fob (if applicable), should also be removed from the key ring.

573.6(c)(6): As permitted by the provisions of 49 C.F.R. 573.6(b), and pursuant to the requirements of 49 C.F.R. 573.6(c)(6), General Motors now submits the attached chronology of principal events that were the basis for the determination that the defect related to motor vehicle safety. See Attachment B. This chronology refers to numerous engineering



inquiries, known within General Motors as Problem Resolution Tracking System ("PRTS") inquiries. As stated in the enclosed document, General Motors is prepared to share with NHTSA upon request the PRTS reports referenced therein, as well as other documentation related to this recall.

573.6(c)(8): Dealers are to replace the ignition switch.

GM will provide the dealer bulletin and owner letter mail dates when available.

Pursuant to 577.11(e), GM will provide reimbursement to owners for repairs completed on or before ten days after the owner mailing is completed, according to the plan submitted on May 23, 2013.

573.6(c)(10): GM will provide copies of the dealer bulletin and owner letter under separate cover.

573.6(c)(11): GM's assigned recall number is 13454.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Carmen Benavides". The signature is fluid and cursive, with the first name "M." and last name "Benavides" clearly distinguishable.

M. Carmen Benavides, Director  
Product Investigations and Safety Regulations

13454  
Attachments

**VEHICLES POTENTIALLY AFFECTED BY MAKE, MODEL, AND MODEL YEAR  
PLUS INCLUSIVE DATES OF MANUFACTURE**

| <u>MAKE</u> | <u>MODEL SERIES</u> | <u>MODEL YEAR</u> | <u>NUMBER INVOLVED</u> | <u>INCLUSIVE MANUFACTURING DATES (FROM) (TO)</u> |            | <u>DESCRIPTIVE INFO. TO PROPERLY IDENT. VEH.</u> | <u>EST. NO. W/CONDITION</u> |
|-------------|---------------------|-------------------|------------------------|--|------------|--|-----------------------------|
| Chevrolet   | A                   | 2005              | 140,978                | 08/03/2004                                       | 06/17/2005 | Cobalt   | *                           |
| Chevrolet   | A                   | 2006              | 229,578                | 04/05/2005                                       | 06/09/2006 | Cobalt   | "                           |
| Chevrolet   | A                   | 2007              | 215,667                | 04/20/2006                                       | 08/16/2007 | Cobalt   | "                           |
| Pontiac     | A                   | 2007              | 32,899                 | 04/20/2006                                       | 08/06/2007 | G5   | "                           |
| GM Total:   |                     |                   | 619,122                |  |            |  |                             |

\* All involved vehicles will be corrected as necessary.

573.6(c)(2)(iv): Delphi Packard Electrical/Electronic Architecture  
5725 Delphi Drive  
M/C 483.400.301  
Troy, Michigan 48098

Tel: [1] 248.813.2334  
Fax: [1] 248.813.2333

The involved parts are manufactured in Mexico.

## ATTACHMENT B - 573.6(c)(6)

**2004.** Around the time of the launch of the 2005 Chevrolet Cobalt, GM learned of at least one incident in which a Cobalt lost engine power because the key moved out of the “run” position when the driver inadvertently contacted the key or steering column. GM employees were able to replicate this phenomenon during test drives. An engineering inquiry, known within GM as a Problem Resolution Tracking System inquiry (hereinafter “PRTS”), was opened to investigate the issue.<sup>1</sup> Engineers believed that low key cylinder torque effort was an issue and considered a number of potential solutions. After consideration of the lead time required, cost, and effectiveness of each of these solutions, the PRTS was closed with no action.

**2005.** GM employees received new field reports of Cobalts losing engine power, including instances in which the key moved out of the “run” position when a driver inadvertently contacted the key or steering column. Further PRTS’s were opened to re-assess this issue. During the course of a PRTS opened in May 2005, an engineer proposed that GM redesign the key head from a “slotted” to a “hole” configuration. That proposal was initially approved, but later cancelled. The PRTS process led to GM’s issuing an Information Service Bulletin 05-02-35-007 in December 2005. This Service Bulletin provided “Information on Inadvertent Turning of Key Cylinder, Loss of Electrical System and No DTCs,” and applied to 2005-06 Chevrolet Cobalts, 2006 Chevrolet HHRs, 2005-06 Pontiac Pursuits (Canada only), 2006 Pontiac Solstices, and 2003-06 Saturn Ions. These vehicles were all equipped with the same ignition switch. The Service Bulletin informed dealers that: “there is potential for the driver to inadvertently turn off the ignition due to low ignition key cylinder torque/effort”; “[t]he concern is more likely to occur if the driver is short and has a large and/or heavy key chain”; and “the customer should be advised of this potential and should take steps to prevent it—such as removing unessential items from their key chain.” In addition, the Service Bulletin advised that “Engineering has come up with an insert for the key ring so that it goes from a ‘slot’ design to a hole design. As a result, the key ring cannot move up and down in the slot any longer—it can only rotate on the hole.” The Service Bulletin further stated that, “[i]n addition, the previous key ring has been replaced with a smaller, 13 mm design. This will result in the keys not hanging as low as in the past.”

Certain of the reported incidents that pre-dated GM’s issuance of Service Bulletin 05-02-35-007 and GM’s public response to inquiries about those incidents were chronicled in newspaper articles that appeared in the *NEW YORK TIMES*, the *CLEVELAND PLAIN DEALER*, and *THE DAILY ITEM* (Sunbury, PA). GM concluded in December 2005 that the Service Bulletin and field service campaign was the appropriate response to the reported incidents, given that the car’s steering and braking systems remained operational even after a loss of engine power, and the car’s engine could be restarted by shifting the car into either neutral or park.

GM updated the Service Bulletin in October 2006 to include additional vehicles and model years—specifically, the 2007 Chevrolet Cobalt, the 2007 Chevrolet HHR, the 2007 Pontiac G5, the 2007

---

<sup>1</sup> GM is prepared to share with NHTSA upon request the PRTS reports referenced in this document.

Pontiac Solstice, the 2007 Saturn Ion, and the 2007 Saturn Sky.<sup>2</sup> GM's warranty records indicate that GM dealers have provided key inserts to 474 customers who brought their vehicles into dealers for service.

**2006.** On April 26, 2006, the GM design engineer responsible for the Cobalt's ignition switch signed a document approving changes to the ignition switch proposed by the supplier, Delphi Mechatronics. The approved changes included, among other things, the use of a new detent plunger and spring that increased torque force in the ignition switch. This change to the ignition switch was not reflected in a corresponding change in the part number for the ignition switch. GM believes that the supplier began providing the re-designed ignition switch to GM at some point during the 2007 model year.

A PRTS was opened on August 1, 2006, after a customer complained of stalling after the car's ignition switch had been replaced. This PRTS indicated that the condition could not be duplicated after more than 100 miles of driving and the PRTS was canceled on October 2, 2006.

**2007.** On March 29, 2007, a group of GM employees met with NHTSA representatives in Washington, D.C. to discuss occupant restraint systems. During this meeting, a NHTSA representative informed the GM employees of a fatal crash that occurred on July 29, 2005, in which a 2005 Cobalt was involved in a frontal collision, the airbags did not deploy, and data retrieved from the car's sensing and diagnostic module ("SDM") indicated that the car's power mode status was "accessory" (hereinafter "the July 29, 2005 crash"). While GM Legal Staff opened a file relating to this crash in September 2005, the GM employees meeting with NHTSA on this occasion were not aware of the crash at the time of the meeting. After this meeting, a GM investigating engineer was tasked with tracking crashes in which Cobalts were involved in frontal impacts and the airbags did not deploy, in order to try to identify common characteristics of these crashes. By the end of 2007, GM had notice of ten such incidents. SDM data was available for nine of the ten crashes, and that data showed that the ignition was in the "run" position in five of the crashes and in the "accessory" position in four of the crashes.

**2009.** In February 2009, another PRTS was opened and resulted in the top of the key being changed from a "slot" design to a "hole" design. According to the PRTS, "[c]ustomers with substantially weighted key chains/additional keys hanging from ignition key have experienced accidental ignition shut-off. Changing from a slot to a hole will significantly reduce downward force and the likelihood of this occurrence." This key design change was implemented in model year 2010 Cobalts.

On or about May 15, 2009, several GM engineers met with representatives of Continental, the supplier of the SDMs used in the Cobalt. In the fourteen frontal-impact crashes for which SDM data was then available, the ignition was recorded in "run" for seven of the crashes and in the "accessory" position for the other seven. Prior to this meeting, GM had provided Continental with

---

<sup>2</sup> GM's records contain references to a second update of the Service Bulletin in July 2011, which covered the same models and model years as the first update in October 2006. However, upon investigation, GM believes that the Service Bulletin was not updated in July 2011.

two SDMs from crashes involving a 2005 Cobalt and a 2006 Cobalt in which the airbags had not deployed and the SDM data indicated that the car's ignition switch was in the "run" position at the time of the crash. During this meeting, Continental representatives informed the GM engineers that, according to further stored data inaccessible to GM engineers but retrieved by Continental, the SDM's sensing algorithm had been disabled at the time of the crash, and discussed reasons why this may have happened. Although GM engineers had identified other crashes in which airbags had not deployed and the ignition switch was recorded in the "run" position at the time of the crash, GM engineers were not able to obtain the SDMs from the vehicles involved in these crashes for further interrogation by Continental.

**2010.** During the summer of 2010, GM discontinued production of the Cobalt at the end of the 2010 model year, as previously planned.

**2011.** In late July 2011, a meeting was held at GM involving Legal Staff, Field Performance Assessment ("FPA") and Product Investigations personnel who would be involved in the Field Performance Evaluation ("FPE") process. Soon thereafter, in August 2011, a Field Performance Assessment Engineer ("FPAE") was assigned to move forward with an FPE investigation of a group of crashes in which airbags in 2005-2007 model year Chevrolet Cobalts and a 2007 Pontiac G5 had not deployed during frontal impacts.

Then as now, GM's FPE process consisted of several steps, beginning with investigation of the issue, then presentation of potential solutions to decision makers, and culminating in a decision and implementation of that decision. At the outset of the process, investigating engineers work to develop technical understanding of the issue. They then present their findings and proposed solutions to the Field Product Evaluation Recommendation Committee ("FPERC"). The FPERC's recommendations are then presented to the Executive Field Action Decision Committee ("EFADC"), which decides on a course of action. The FPERC and EFADC may request further analysis before making recommendations or decisions as to what, if any, field action is warranted.

GM's initial investigation of these crashes had revealed that the SDM data available from the involved vehicles showed that some of the ignitions were recorded as having been in the "run" position, while others were recorded as having been in either the "accessory" or "off" positions, at the time of the crash. Because many of the crashes known to GM at the time involved violent off-road impacts occurring under widely varying circumstances and because many involved excessive speeds, different theories had been offered as to why the airbags had not deployed in the various incidents. The assigned FPAE was asked to assess whether common issues or concerns might explain some or all of the non-deployment crashes.

**2012.** Based on the information then available, the investigation sought, among other things, to determine whether there were known engineering reasons that would explain why these reported non-deployment crashes involved 2007 and earlier model year vehicles. In May 2012, the assigned FPAE studied a cross-section of steering columns and ignition switches from Chevrolet Cobalts, Chevrolet HHRs, Pontiac G5s, and Saturn Ions, in model years ranging from 2003 through 2010. The FPAE accessed, inspected, and tested these steering columns and ignition switches for torque performance at a salvage yard. Certain of these ignition switches exhibited torque performance below that specified by GM for the ignition switch. The most prevalent shortfalls in performance

were observed on ignition switches found in 2007 and earlier model year vehicles. The FPE investigation focused on determining the cause of these variations in torque performance by model year. A review of GM's records by those involved in the investigation did not identify design changes to the ignition switch that would explain the variations in torque performance for the 2007 and earlier model year vehicles and that of the 2008 and later model year vehicles. GM also considered other components that might potentially influence the torque performance of the ignition switches, including changes made to the car's theft system at the beginning of the 2008 model year. Again, no explanation was discovered. GM engineers conducted separate studies using the "Red X" and "Design for Six Sigma" problem-solving methodologies, in hopes of better understanding the differences in observed torque performance, but those, too, produced inconclusive results. These latter studies were concluded in November 2012 and January 2013, respectively.

**2013.** In late April 2013, the FPAE learned that the torque performance of a GM service part ignition switch purchased after 2010 differed substantially from that of an ignition switch that was original equipment installed on a 2005 Cobalt. He also learned that others had observed and documented that the detent plunger and spring used on the service part switch differed from those used on the original equipment switch installed on the 2005 Cobalt. Shortly thereafter, GM retained outside engineering resources to conduct a comprehensive ignition switch survey and assessment. That investigation included torque performance testing, ignition switch teardowns, and x-ray analyses of ignition switches used in production vehicles both before and after the 2007 model year. The data gathered by GM's outside technical expert showed that: the ignition switches that he tested that had been installed in early-model Cobalts did not meet GM's torque specification; changes had been made to the ignition switch's detent plunger and spring several years after the start of production; and those changes most likely explained the variation from GM's specifications for torque performance observed in the original switches installed in 2007 and earlier model year vehicles.

On October 29, 2013, after dialogue with the supplier, GM was provided with supplier records showing that changes had in fact been made to the detent plunger and spring late in the 2006 calendar year. Those changes increased the switch's torque performance. Testing and analysis further determined that whether a key moves from the "run" to "accessory" position and how that key movement affects airbag deployment depends on a number of factors, including: vehicle steering inputs and path of travel immediately before key movement; the weight and load on the key ring immediately before key movement; whether the installed ignition switch meets the torque specifications that GM provided to its supplier; and the timing of the movement of the key out of the "run" position relative to the activation of the airbag's sensing algorithm of the crash event.

Upon completion of this analysis, the issue was presented to the Field Performance Evaluation Review Committee ("FPERC") and the Executive Field Action Decision Committee ("EFADC"). These two committees reviewed the findings in early December, culminating in an EFADC meeting on December 17, 2013. Factual questions were raised at that meeting that required further analysis, the findings of which were presented at a second EFADC meeting on January 31, 2014, on which date the EFADC directed a safety recall.

The dealers are to replace the ignition switch. GM will provide the dealer bulletin and owner letter mail dates when available. Pursuant to 577.11(e), GM will provide reimbursement to owners for repairs completed on or before ten days after the owner mailing is completed.

Between 2005 and the date of this submission, GM is currently aware of 23 frontal-impact crashes involving 2005 to 2007 Chevrolet Cobalts and 2007 Pontiac G5s in which the recall condition may have caused or contributed to the airbags' non-deployment. During that same timeframe, of these crashes, GM is currently aware of six that resulted in eight fatalities of frontal occupants. GM employees became aware of many of these crashes within a month of the dates on which they occurred. As GM learned of these crashes, employees undertook to investigate the underlying facts and circumstances to determine, among other things, why the airbags had not deployed. With respect to 22 of the 23 frontal-impact crashes referenced above, the data retrieved from the vehicles' SDMs indicated that the ignition switches were in the "run" position in nine of the crashes, in the "accessory" position in twelve of the crashes, and in the "off" position in one of the crashes.<sup>3</sup> Throughout this period, GM was involved in claims and lawsuits in which allegations were made regarding the ignition switch issue that is the subject of the recall. These 23 crashes are out of a total U.S. population of 619,122 vehicles subject to the pending recall.

---

<sup>3</sup> In one of the 23 crashes referenced above, SDM information could not be retrieved from the vehicle.