2005-7 Cobalt/G5

Team Members:

- Brian Stouffer PI - Team Leader
- Jeff Konchan, Bruce Jackson - Body
- Terry Connolly, John Zuzelski - Chassis
- Kristen Siemen, David Carey - Electrical Systems
- John Capp, Lisa Weber - Passive Safety Systems
- Dave Defrain, Brian Thompson - Electrical Controls
- Carmen Benavides, Doug Wachtel - PI
- Terry Woychowski - VP Global Prod Development

2005-7 Cobalt/G5

Project Statement:
A review of selected GMX001 field events shows a voltage drop out to the SDM has occurred under certain conditions. The condition appears to be limited to 2005-07 MY vehicles (1 report on 2008). The noted field events involve vehicles going off the road and/or hitting smaller objects shortly before a significant impact.

Initial Questions:
- Why no incidents on Ion or HHR?
- Why limited or no incidents on 2008/09/10 Cobalt?

Objectives:
- Determine:
  - the technical root cause of the issue
  - vehicle operating conditions that can cause voltage dropout

Develop countermeasure alternatives once the technical root cause has been developed
2005-7 Cobalt/G5

Refine the statements of fact:

- What additional clues are in EDR data?
- Generate clues from post crash inspections (is there any indication of key/ignition cylinder position after crash)
- What are switch detent requirements?
- When did key p/n change from a slot to a hole? (Aug 2009)
- List of changes in system (column, key, switch, SDM, sensing, architecture, etc.) between 2007 and 2008 Cobalt
  - Switch went from Passlock-3 to Passkey theft prevention
- What makes the 2005-7 Ion and 2006-7 HHR different than Cobalt?
  - Ion is Class 2 architecture vs GM LAN on Cobalt
    - Both disable SDM with key off, but Cobalt will store ignition state while Ion will not.
  - Ion has different SDM and supplier than Cobalt
2005-7 Cobalt/G5
Potential evaluation techniques:

- Evaluate a car on the 4 Post test
  - What to include on key ring?
- Evaluate an instrumented car driven off-road

2005-7 Cobalt/G5
Potential countermeasures:

- Change switch to increase detent forces
- Change keys to only use centered hole
- Keep BCM / SDM powered after key – off
#05-02-35-007A: Information on Inadvertent Turning of Key Cylinder, Loss of Electrical System and No DTCs - (Jul 1, 2011)

**Subject:** Information on Inadvertent Turning of Key Cylinder, Loss of Electrical System and No DTCs

**Models:** 2005-2007 Chevrolet Cobalt  
2005-2006 Chevrolet HHR  
2005-2006 Pontiac Pursuit (Canada Only)  
2007 Pontiac G5  
2005-2007 Pontiac Solstice  
2003-2007 Saturn Ion  
2007 Saturn Sky

This bulletin is being revised to add a model year. Please discard Corporate Bulletin Number 05-02-35-007 (Section 02 - Steering).

There is potential for the driver to inadvertently turn off the ignition due to low ignition key cylinder torque/effort.

The concern is more likely to occur if the driver is short and has a large and/or heavy key chain. In these cases, this condition was documented and the driver's knee would contact the key chain while the vehicle was turning and the steering column was adjusted all the way down. This is more likely to happen to a person who is short as they will have the seat positioned closer to the steering column.

In cases that fit this profile, question the customer thoroughly to determine if this may be the cause. The customer should be advised of this potential and should take steps to prevent it — such as removing unessential items from their key chain.

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. In addition, the previous key ring has been replaced with a smaller, 13mm (0.5 in) design. This will result in the keys not hanging as low as in the past.
GMX001 Airbag Local Area Network (LAN)

2005-7 Cobalt/G5 Potential Non-Deployments (Ignition Switch)

US (Cobalt & G5)
18 incidents/6 yrs avg exposure or 3 incidents/year
18 incidents/617,832 vehicles/6 yrs avg exposure = 0.049 incidents/10,000 vehicles
2000 C/K rate is 3.2 times higher

TREAD Search as of 3/7/12: 57 alleged non-deploy cases (2 indicate fatality) do not have sufficient data to exclude them.

NOTE: FPA has one case for 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>140,464</td>
<td>229,231</td>
<td>248,137</td>
<td>617,832</td>
</tr>
</tbody>
</table>

US/Canada/Mexico Sales (Cobalt, G5 & Pursuit)

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>173,450</td>
<td>287,400</td>
<td>317,712</td>
<td>778,562</td>
</tr>
</tbody>
</table>
Cobalt Ignition System Changes

<table>
<thead>
<tr>
<th>VIN</th>
<th>Sequence</th>
<th>Model Year</th>
<th>Engine</th>
<th>System</th>
<th>Description</th>
</tr>
</thead>
</table>

For the 2006 model year, the following changes were made to the Cobalt Ignition System:

- **BMS0051 Program Updates:**
  - **Goal:** Improve ignition system performance.
  - **Changes:**
    - Add new software enhancements to improve ignition system efficiency.
    - Replace existing keyless entry system with improved technology.

- **Mechanical Enhancements:**
  - **Goal:** Reduce engine vibration.
  - **Changes:**
    - Modify engine components to reduce noise and vibration.

- **Electronic Adjustments:**
  - **Goal:** Enhance fuel efficiency.
  - **Changes:**
    - Update fuel injection strategies to improve fuel economy.

- **Performance Tuning:**
  - **Goal:** Increase overall performance.
  - **Changes:**
    - Adjust engine calibrations for better performance.
    - Modify exhaust system for improved sound quality.

**Field Incident Summary from SDM Download**

- **8 in Accessory**
- **2 in "Run" showed that algorithm was disabled when Conti downloaded the EEPROM and looked at all of the data in the SDM.**