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To: John A. Calabrese – Vice President Global Vehicle Engineering
Alicia Boler-Davis – Senior Vice President Global Quality &
Customer Experience

Subject: Preventive Action Documentation (N-130454)
2005-2007 Cobalt/Pursuit/G5 Ignition Switch

Condition:

During certain road inputs the ignition switch may move from the RUN position to ACCESSORY or OFF. If the key does not remain in the RUN position, the airbags may not deploy.

Root Cause:

Technical Root Cause

The ignition switch torque performance may be below specifications.

Systemic Root Cause

Delphi Mechatronics, supplier of the ignition switch, was a self certified supplier, which required less oversight.

Validation Test Summary reports were not maintained as a standard practice in 2002 & 2003 calendar years. The Validation Test Summary reports state whether the executed tests passed or failed. Test data is not routinely provided.

Component level validation was reported to GM by Delphi, to be successfully completed, meeting all requirements.

Component level validation is conducted by the supplier in a laboratory environment. This test is conducted in line with switch center axis, measuring the rotational torque.

Detent rotation torque was not monitored to ensure the ignition switches continually meet the Torque vs Angle Curve specification.

GM did not require a system level test to confirm compliance to various key force/torque requirements for ignition key/lock/switch system.

Key rotation Issue from Run to Acc/Off was first identified as a severity 3 (no customer impact) warranty issue, where knee impact was the cause. PRTS N172404 was issued November 19, 2004. The supporting incident occurred on October 29, 2004.



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Switch detent was first recognized as being lower than desired approximately May 24, 2005, in PRTS N182276. The supporting incident was October of 2004. This PRTS was also rated as a Severity 3 issue, not affecting the customer. The confluence of these two contributing causes, led the engineering team to focus on adding an additional mechanical detent, in parallel, to the switch. This would mean a new, ground up design, which is expensive and time consuming, but would increase the force required for key rotation out of Run. As a containment, bulletin # 05-2-35-007 was issued as a shorter term containment, removing the key slot. The redesign of the switch was presented to the program team, but rejected due to cost and long timing. At this point, the stronger spring was introduced as a continuous improvement, as part of an existing Engineering Work Order for circuit board changes.

Vehicle stalling was introduced by PRTS 2327/2006 on August 2, 2006, with an unknown incident date. This vehicle had the ignition switch replaced, and the vehicle still stalled. Reported vehicle stalled while driving on highway (smooth road). No indication of key rotation at all. PRTS cancelled October, 2006.

Corrective Action:

The vehicles are no longer in production. Future Programs are migrating to PEPS (Push Button Start) mounted on the IP.



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Preventive Actions:

#	Description	Assigned To	Target Due Date
1	Cement Database created to retain Supplier Validation Documents		Complete
2	Modify CTS to directly call out the torque needed to rotate from Run to Accessory	Ignition Switch BFO	2/15/14
3	Modify Ignition Switch CTS test flow to call out Validation of Ignition Switch Torque Displacement Curve as a specific test instead of being included in the grouping of baseline performance testing.	Ignition Switch Validation Eng	3/1/14
4	The BFO/GSSLT Lead will develop a Global Read-Across and Remediation plan.	Ignition Switch BFO	Complete
5	Develop/ Define a continuous monitoring program with the supplier to ensure the torque remains in specification through the life of the program (i.e. Control Plan)	Supplier Quality Engineer	4/1/14
6	These Preventive Actions will be scheduled for review at the Global Electrical Council and include the Global Read Across and Remediation Plan.	J. Murawa	
7	This condition and the associated Preventive Actions will be specifically reviewed at the next Recall Learning Symposium.	SME Name	

Preventive Action target due dates should not exceed six months from signature.

Date

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Infotainment and OnStar Engineering