

## N140772 Chronology of Defect

As noted in the defect description, GM is expanding the original recall population of NHTSA Recall No. 14V153 to cover additional vehicles built between April 1, 2006 and June 30, 2006. The recall population is being expanded because GM has since identified an additional, contributing cause of the EPS failures that was not fixed by the supplier until June 30, 2006, as explained in more detail below.

At the time GM submitted its 573 letters for NHTSA recall number 14V153, GM thought the sole cause of the EPS failure was a torque sensor crimp problem that the torque sensor supplier had successfully fixed on March 31, 2006 by implementing a crimp optimization. Accordingly, GM recalled only the subject vehicles built before the crimp optimization fix—i.e., those built on or before March 31, 2006. In addition to the 573 letter, GM also issued the required notice of defect for the EPS failure on March 31, 2014 to Transport Canada.

On April 2, 2014, GM received an inquiry from Transport Canada regarding consumer complaints in Canada of EPS failures on the subject vehicles that were not included in recall 14V153 because they were built after the crimp optimization fix. Between April and October 2014, GM Canada conducted a preliminary investigation of EPS failures in Canada in the subject vehicles that were not covered by the earlier recall. On October 22, 2014, GM Canada presented its findings to GM's Potential Investigation Review (PIR). On the same day, GM's opened an investigation.

Between October 22 and November 21, 2014, GM analyzed field data from a number of sources that revealed a relatively high number of EPS failures on subject vehicles built in the 3-month period between April and June 2006, just after the builds included in recall 14V153.

On January 6, 2015, GM discovered that in addition to the crimp optimization on March 31, 2006, the torque sensor supplier (Nexteer) had made additional improvements to the EPS sensor assembly on June 30, 2006—namely, the supplier added silver plating to the sensor's connectors. The silver plating addition on June 30, 2006 coincided with reduced EPS failure incidents in the field for builds after June 30, 2006. To confirm that the silver plating contributed to solving the EPS failures, GM and Nexteer analyzed EPS torque sensor assemblies with and without the silver plating. The tests confirmed that the added silver plating improved the electrical connection to the EPS sensor, which increased the torque sensor's long-term performance/durability and reduced EPS failures.

The investigation was reviewed at the Open Investigations Review (OIR) meeting on January 26, 2015. On January 27, 2015, GM's Safety Field Action Decision Authority (SFADA) decided to conduct a safety recall that expands the population of vehicles addressed in previous recall 14116 (14V153).