



U.S. Department  
of Transportation

**National Highway  
Traffic Safety  
Administration**

# ODI RESUME

**Investigation:** RQ 13-003  
**Date Opened:** 07/05/2013  
**Investigator:** Emily Reichard  
**Approver:** Frank Borris  
**Subject:** Generator Control Module Fires  
**Date Closed:** 07/22/2014  
**Reviewer:** Scott Yon

## MANUFACTURER & PRODUCT INFORMATION

**Manufacturer:** General Motors LLC  
**Products:** 2013 Malibu Eco & 2012-13 Regal, LaCrosse eAssist HEV  
**Population:** 52,563  
**Problem Description:** The Generator Control Module (GCM) may overheat, which could lead to smoke and/or fire.

## FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
<b>Complaints:</b>	0	234	234
<b>Crashes/Fires:</b>	0	2	2
<b>Injury Incidents:</b>	0	0	0
<b>Fatality Incidents:</b>	0	0	0
<b>Other*:</b>	0	104	104

\*Description of Other: Warranty claims for replacement of the GCM.

## ACTION / SUMMARY INFORMATION

**Action:** This Recall Query has been closed.

### Summary:

On July 5, 2013 the Office of Defects Investigation (ODI) opened Recall Query RQ13-003 to investigate whether the service procedures utilized in recall bulletins 13136 and 13142 for safety recall 13V-173 were sufficient to identify the safety defect in the subject vehicles. These safety recalls were issue on May 3, 2013 to address the improper function of the Generator Control Module (GCM) in certain model year (MY) 2012-13 Buick LaCrosse and Regal and MY 2013 Chevrolet Malibu Eco equipped with eAssist. This condition may result in a loss of battery charge, engine stall and/or inability for the vehicle to start. In severe cases it may also lead to odor, smoke and possibly a fire in the trunk.

During discussions with General Motors (GM), ODI was informed that the subject vehicles could be separated into 4 distinct build populations, or groups. Group A contained vehicles built from the start of production through 3/19/2012. Group B involved vehicles built from 3/20/2012 to 8/20/2012, group C from 8/21/2012 to 12/31/12, and group D from 1/1/2013 onwards. Bulletin 13136 instructed dealers to inspect and, if necessary, replace the GCM for vehicles in groups A or C. Bulletin 13142 instructed dealers to replace the GCM of any vehicle in group B. Group D vehicles were not recalled.

All eAssist vehicles have a Powerpack which contains a BAS (belt alternator-starter) Power Inverter Module (BPIM)/ Accessory Power Module (APM) and a 115-V Lithium-Ion battery. The Powerpack is known by GM's Part Description System as the GCM and Battery Module. The BPIM/APM contains 3 multi-layered printed circuit boards (PCBs) comprised of conductive layers separated by isolating layers. Vehicles built within the time periods of groups A and B had PCBs using single isolation layers. Vehicles build in group C had dual isolation layers on 1 of the 3 PCBs, and group D had all 3 PCBs built with dual insulation. Adding dual insulation to a PCB makes it more robust to material and manufacturing variations, and ultimately less susceptible to an electrical short circuit and subsequent failure.

Through initial analysis of the GCM failures, GM identified that vehicles within group B contained PCBs that were contaminated during production due to increased production volumes that resulted in inadequate quality control. GM also noted that GCM failures occurred early in the life of the vehicle (typically <1000 miles). Therefore a service procedure was developed to replicate early life failures by subjecting the GCM to high current loads which would cause the identified failure mechanism (copper migration) to occur quickly and reveal any underlying PCB defect. Although groups A and C were built with PCBs containing single layer PCBs, they were built using better quality control, and as the data supports, experienced significantly lower failures. GM advised that for these reasons the two different service procedures were used in the Recall 13V-173 population.

In response to ODI's Information Request (IR) GM submitted 234 unique reports related to the alleged problem. It was noted that 197 (84%) of the received reports fell into the group B population. The 2 fire incidents noted were events in which flames were evident and/or damage was experienced outside of the GCM. Both of these incidents involved group B vehicles. One hundred four warranty claims were also submitted in response to the IR, with 96 claims (92%) from group B. It was also noted that none of the claims from groups A or C occurred after the service procedure was conducted, and that the majority of the A or C incidents occurred during the service procedure. Given the data, ODI believes the service procedure sufficiently identified the safety defect, therefore the investigation is closed and further use of agency resources does not appear to be warranted.