

Accident Data

Device S/N: G60020CE3BCF

Device Model: Geotab GO6

Customer: ██████████

Date of Analysis: 30/October/2017

Date of Accident: 28/September/2017

My name is Josh Gloor, I work as a Technical Services Engineer at Geotab. My day to day activities include data analysis, hardware and software support and testing. I have a Masters in Engineering Design and a Bachelors in Automotive and Vehicle Technology both from McMaster University.

For over a decade, Geotab has been a proven industry leader in the area of GPS fleet management and vehicle tracking, also known as telematics. Fortune 500 companies, including 40% of the top ten fleet and 18% of the top 100 fleets in North America, rely on Geotab's technology. Geotab's products are represented and sold worldwide through its Authorized Reseller network.

Four core pillars drive Geotab's ongoing innovation, which helps businesses make improvements in safety, productivity, regulatory compliance, and fleet optimization. The Geotab solution provides in-vehicle driver coaching, accident detection, engine diagnostics, route optimization, real-time GPS vehicle tracking, fuel consumption monitoring, and other features.

Analysis:

On September 28, 2017 at 18:03:02 EDT the telematics device G60020CE3BCF installed in a 2018 Chevrolet Colorado with the VIN 1GCHT BEN4J1100141, recorded an accident level event. Here are the details of this event:

18:03:02	Record Value: Forward:0.86 G Right:0 G Up:0.85 G Reason for the record: Acceleration Record Type: EngineStatusRecord	📍
18:03:02	Record Value: Forward:-0.59 G Right:-0.25 G Up:0.88 G Reason for the record: Acceleration Record Type: EngineStatusRecord	📍
18:03:02	Record Value: Reason for the record: ALERT: Accident limit for acceleration exceeded Record Type: EngineFaultRecord	📍
18:03:02	Record Value: Forward:0 G Right:0 G Up:0.99 G Reason for the record: Acceleration Record Type: EngineStatusRecord	📍
18:03:02	Record Value: Forward:0.23 G Right:0 G Up:0.97 G Reason for the record: Acceleration Record Type: EngineStatusRecord	📍

Figure 1: Device Logs

For a complete log from September 28, 2017 17:45:00 EDT to September 28, 2017 18:30:00 EDT see attached document titled 'Accident and Detail Logs Report - G60020CE3BCF.pdf'



Figure 2: Acceleration Forward and Braking, and Acceleration Side to Side Graphs

It can be seen in Figure 2 that at 18:03:01 EDT the telematics device measured a peak right side acceleration of -41.6586 m/s^2 followed shortly after by a peak negative forwards acceleration of -65.6653 m/s^2 . Afterwards, the telematics device measured a peak negative forwards acceleration of -21.5354 m/s^2 at 18:03:01 EDT which was followed by a peak right side acceleration of -11.4737 m/s^2 . The telematics device then registered a peak negative forwards acceleration of -8.4729 m/s^2 at 18:03:02 EDT. This event indicates a heavy negative forwards acceleration followed shortly after by a heavy right side acceleration experienced by the telematics device. The first peak represents the accident level event that was detected by the telematics device.



Figure 3: Engine Speed (RPM)

In Figure 3 at 18:02:52 EDT the telematics device measured the engine speed (RPM) as 1082.75. At 18:03:01 EDT the RPM had increased to 2008.5 RPM, which then decreased to zero RPM at 18:03:04 EDT. This indicates that the RPM was decreasing at the time of the accident level event.



Figure 4: Speed Profile

Figure 4 is a speed profile indicating the speed logged from the telematics device during the time period of the accident level event. The blue lines indicate the device's speed. Red lines indicate a confirmed posted road speed. The telematics device reported the speed as 50 km/h at 18:03:01 EDT before decreasing to 42 km/h at the time of the accident level event at 18:03:02 EDT before decreasing further to 6 km/h at 18:03:03 EDT. The telematics devices reported the vehicle reached a 0 km/h speed at 18:03:04 EDT.

Figure 5: Device Trip Map



Figure 6: Accident Event Location Map

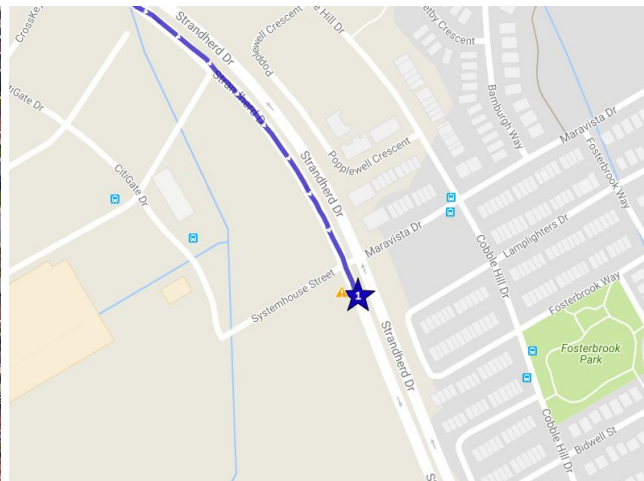
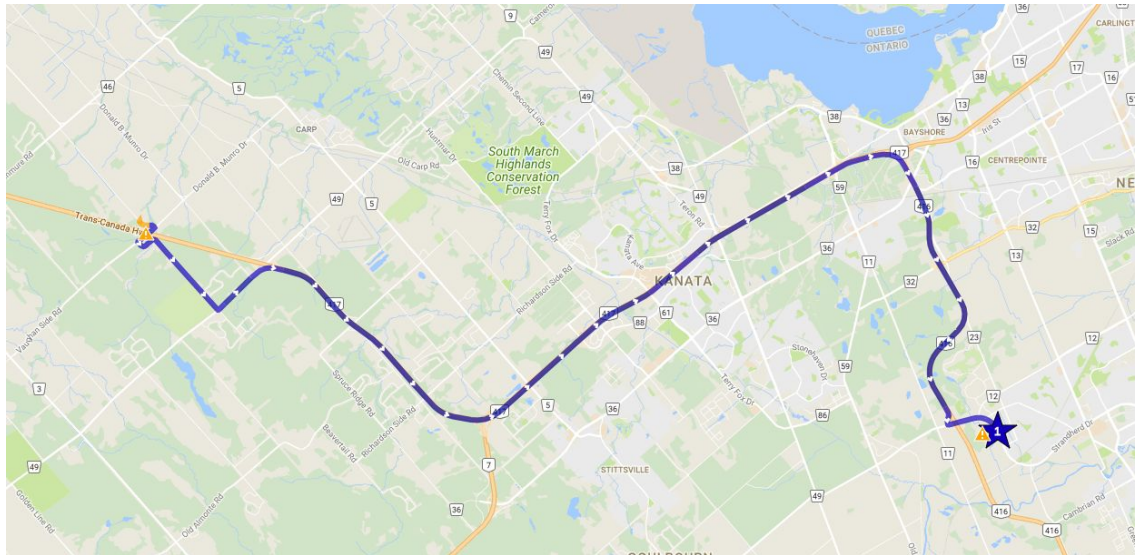


Figure 7: Device Complete Trip Map



Figures 5 through 7 indicate the location of the accident level event as the device detected movement at 18:03:02 EDT on Strandherd Dr. The approximate location of the accident level event was at 45.26868 latitude, -75.78009 longitude at 18:03:02 EDT (4175 Strandherd Dr, Nepean, ON K2J, Canada). At 18:03:03 EDT the device next registered a GPS location of 45.26865 latitude, -75.78006 longitude (4175 Strandherd Dr, Nepean, ON K2J, Canada) followed by a GPS location of 45.26865 latitude, -75.78006 longitude (4175 Strandherd Dr, Nepean, ON K2J, Canada) where a 0 km/h speed was detected at 18:03:04 EDT.



Figure 8: Google Streetview Approximate Event Location

Please note that all times are recorded in Eastern Daylight Time (EDT), all speeds are in kilometers per hour (km/h).

Reconstruction:

- Based on the data collected by the telematics device, on September 28, 2017 at 18:03:02 EDT the telematics device with serial number G60020CE3BCF experienced an accident level event. This occurred as the device detected positioning on Strandherd Dr at 18:03:02 EDT at 45.26868 latitude, -75.78009 longitude corresponding to 4175 Strandherd Dr, Nepean, ON K2J, Canada. The GPS speed at 18:03:02 EDT was registered at 42 km/h during the time of the accident level event. The device measured zero km/h speed at 18:03:04 EDT at 45.26865 latitude, -75.78006 longitude corresponding to 4175 Strandherd Dr, Nepean, ON K2J, Canada and detected an ignition off event at 18:03:04 EDT. The telematics device decoded a fault provided by the vehicle's Electronic Control Module (ECM) as "Active Fault : FAULT_AIRBAG_DEPLOYED (181)" at 18:03:01 EDT followed shortly after by a fault decoded as "Active Fault : FAULT_FRONTAL_IMPACT_PRETENSIONER_SEVERITY_ACHIEVED (183)". The telematics device registered that the brake pedal was applied at 18:03:01 EDT.

Appendix:

- Geotab cannot verify the installation of the telematics device.
- Geotab cannot verify the driver of the vehicle. All information in this document are based on data uploaded from the Geotab GO6 with the serial number G60020CE3BCF. The customer associated the name "[REDACTED]" with the vehicle in question in the Geotab system.
- Acceleration side to side. Negative is right and positive is left.
- Acceleration forward or braking. Positive is forward and negative is backwards acceleration.
- Accident level event is defined as an acceleration greater than 24.5 m/s^2 in the forward/reverse or side to side direction. This is a system level threshold that is set on the internal firmware of the device.
- Accidents are detected by the GO device upon any acceleration greater than or equal to 2.5 G where G is the gravitational constant of 9.81 m/s^2 . The firmware will not use accelerometer Up/Down (aka Z axis) in this calculation. The calculation uses the magnitude of the hypotenuse between X and Y ($\sqrt{X^2+Y^2}$) Where X is Forward/Braking and Y is Side to Side.
- All time references are in Eastern Daylight Time for September 28, 2017.
- All references to known or estimated speed limits are from openstreetmaps.org and/or Google Maps.
- The VIN (Vehicle Identification Number) was obtained from the vehicle ECM (Electronic Control Module) collected by the Geotab GO device.
- Data for Geotab GO devices are stored in secure data centers only accessible by Geotab.
- Fault codes are decoded from data obtained from the vehicle ECM. For a detailed description of fault codes contact the appropriate OEM (Original Equipment Manufacturer).

All coordinates are accurate to +/- 2.5 meters and the GPS speed is generally accurate to +/- 1 m/s (3.6 km/h, 2.2 mph) as per Geotab's GPS summary sheet. For more details on accuracy of GPS coordinates, see attached GPS accuracy documents.

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