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Special Crash Investigations: Crash Avoidance Technology Investigation; Vehicle: 2017 Honda Accord; Location: California; Crash Date: October 2018

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15. Supplementary Notes

Each crash represents a unique sequence of events, and generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicles or their safety systems. This report and associated case data are based on information available to the Special Crash Investigation team on the date this report was published.

16. Abstract

This report documents the investigation of a crash involving a 2017 Honda Accord equipped with crash avoidance technology including a crash mitigating braking system (CMBS). This crash occurred in the morning in October 2018 in California. Four vehicles were involved. The lead vehicle was a Cadillac SRX, year unknown, stopped due to stopped traffic in the third lane from the right. A 2008 Honda Civic, which was driven by a 24-year-old male, followed the Cadillac, did not stop, and rear-ended it. The 2017 Honda Accord, driven by a belted 48-year-old female, followed the Civic. The driver of the Accord saw the vehicles stopped ahead, so she braked. The Accord did not stop and rear-ended the Civic. An unidentified vehicle traveling in the fourth lane from the right then side-swiped the left plane of the Accord. Following the crash, the Cadillac and the unidentified vehicle both fled the scene. The two vehicles that remained on-scene were towed due to damage. Neither driver was injured nor transported. The Accord's CMBS did not activate prior to this crash. Given the crash configuration and speed difference between the Honda and the other vehicle, it would appear that the scenario met the CMBS activation conditions as stated in the Honda owner's manual.

17. Key Words	18. Distribution Statement
crash avoidance, FCW, CMBS, air bag, deployment, crash mitigating braking system	The document is available to the public from the National Technical Information Service, www.ntis.gov.

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Crash Avoidance Technology Investigation
Office of Defects Investigation
Case Number: DS18026
Vehicle: 2017 Honda Accord
Location: California
Crash Date: October 2018

BACKGROUND

This report documents the investigation of a crash involving a 2017 Honda Accord (**Figure 1**) equipped with crash avoidance technology including a crash mitigating braking system (CMBS).[1] The investigation was intended to examine the CMBS functionality and determine what role, if any, the braking system played in the crash. The CMBS did not activate prior to this crash. Given the crash configuration and speed difference between the Honda and the other vehicle, it would appear that the scenario met the CMBS activation conditions as stated in the Accord owner's manual. According to an explanation provided by the original equipment manufacturer (OEM), the CMBS functioned as intended. Based on the OEM explanation of the forward collision warning (FCW) and CMBS functionality, the service brake application suppressed the FCW and CMBS, and they remained so during the final 1.0 second prior to impact because the CMBS will not activate for 1 to 3 seconds after brake application ceases. Given the system parameters as defined by the OEM, neither the distance between the Accord and the Civic, accelerator input, nor steering input by the driver of the Accord had any effect on the functionality of the FCW or CMBS. This is discussed further in the Crash Avoidance Technology discussion of this report.

Figure 1. The 2017 Honda Accord.

The investigation was initiated by the Office of Defects Investigation (ODI) group of the National Highway Traffic Safety Administration in response to an owner notification alleging the CMBS failed and did not perform as designed prior to the Accord striking another vehicle in a front-to-back configuration. According to the vehicle owner's manual, CMBS can give visual, audible, and tactile alerts when a potential collision is determined, and reduce vehicle speed to help minimize collision severity when a collision is deemed unavoidable. According to the vehicle owner, no such alerts were given, and no braking assist activated prior to the crash. NHTSA's SCI group assigned the case to Dynamic Science, Inc. in November 2018. The SCI team completed the vehicle inspection in December 2018 with two representatives from Honda North America present. The Accord's Event Data Recorder (EDR) was supported by the Bosch Crash Data Retrieval (CDR) system and was imaged during the inspection and is included in this report as **Appendix A**. The EDR report included crash avoidance data discussed later in this

[1] Honda uses the trademarked term "collision mitigation baking system" in its vehicles.

report. A Honda technician present at the vehicle inspection imaged additional data using a Denso Vehicle Communication Interface (VCI) tool with Honda's proprietary software. He gave the SCI team a PDF copy of the data, included in this report as **Appendix B**.

This crash occurred in the morning in October 2018 in California. Conditions were daylight, clear, and dry. The crash occurred in the westbound lanes of a divided east/west State highway. The westbound roadway included five lanes and four vehicles were involved. The lead vehicle was a Cadillac SRX, year unknown, stopped due to stopped traffic in the third lane from the right. A 2008 Honda Civic, which was driven by a 24-year-old male, followed the Cadillac, did not stop, and rear-ended it. The Accord, driven by a belted 48-year-old female, followed the Civic. The driver of the Accord saw the vehicles stopped ahead, and, in response, she braked. The Accord did not stop and rear-ended the Civic. An unidentified vehicle traveling in the fourth lane from the right then side-swiped the left plane of the Accord in an angled configuration. Following the crash, the Cadillac and the unidentified vehicle both fled the scene. The Accord and the Civic remained on-scene and were towed due to damage. Neither driver was injured.

SUMMARY

Crash Site

The crash occurred in the westbound lanes of a divided east/west State highway. The westbound roadway included five concrete lanes each measuring 3.6 m (12.0 ft) in width and separated by dashed white painted stripes. The roadway was bordered on the left edge by a solid yellow painted fog line, a gravel shoulder measuring 2.4 m (8.0 ft) wide, and a concrete jersey-type barrier. It was bordered on the right edge by a solid white painted fog line, a paved shoulder measuring 3.0 m (10.0 ft) wide configured with a rumble strip, and a steel guardrail (**Figure 2**). The roadway was straight and level, and the posted speed limit was 105 km/h (65 mph). Conditions at the time of the crash were daylight, clear, and dry. A crash diagram is included at the end of this report.

Figure 2. Crash site looking west.

Pre-Crash

A Cadillac SRX was stopped in the third lane from the right. The Civic was traveling behind the Cadillac in the same lane at an unknown speed. The Accord was traveling behind the Civic in the same lane at an EDR-reported speed of 85 km/h (53 mph) at T-5.0 seconds to algorithm enable (AE). The Accord's EDR report indicated the driver was braking and the vehicle was decelerating from that time until approximately T-1.0 second at which time the driver ceased braking and accelerated slightly while steering 20 degrees to the right. The calculated deceleration rate beginning at T-5.0 seconds and ending at T-1.0 seconds was -3.5 mps^2 (-11.62 f/s/s) or -0.36 g, indicating that the driver was braking but not fully braking. The unidentified fourth vehicle was traveling westbound behind the Accord in the fourth lane from the right at an unknown speed. Speed and distance calculations derived from the Accord's EDR pre-crash data are documented in the table on the next page.

Time	Vehicle Speed		Distance Traveled			
			Incremental		Cumulative	
-sec	km/h	mph	m	ft	m	ft
5	85	53	NA	NA	NA	NA
4.5	82	51	11.4	37.4	11.4	37.4
4	74	46	10.3	33.7	21.7	71.1
3.5	60	37	8.3	27.1	29.9	98.2
3	50	31	6.9	22.7	36.9	120.9
2.5	43	27	6	19.8	42.9	140.7
2	38	24	5.4	17.6	48.2	158.3
1.5	34	21	4.7	15.4	52.9	173.7
1	34	21	4.7	15.4	57.6	189.1
0.5	36	22	4.9	16.1	62.5	205.2
0.0	37	23	5.2	16.9	67.7	222.1

The Accord's EDR-reported pre-crash data at T-0.0 seconds are documented in the tables below.

Time Stamp	Vehicle Speed (mph [km/h])	Accelerator Pedal % Full	Service Brake	ABS Activity	Stability Control	Steering Input (deg)	Engine rpm
0.0	23 [37]	0	Off	Off	On, Non-Engaged	-15[2]	2,500

Time Stamp	Forward Collision Warning	Collision Mitigation Braking System (Not Engaged/ Engaged)	Collision Mitigation Braking System, Forward Collision Warning (On/Off)	Lane Departure Warning	Road Departure Mitigation	Road Departure Mitigation
0.0	Not Warning	Not Engaged[3]	On[4]	Not Warning	Not Engaged	Off

[2] According to the CDR data limitations, a negative steer angle indicates a right turn.
[3] The EDR report indicated the CMBS did not engage prior to the crash. Engagement includes up to three alert stages (visual, audible, and tactile) followed by brake application, depending on circumstances.
[4] The CMBS can be turned on/off by pressing a button on the instrument panel. The EDR reported the on/off status was "on." The system must be "on" before it can engage.

Time Stamp	Adaptive Cruise Control	Adaptive Cruise Control	Lane Keeping Assist	Lane Keeping Assist	Cruise Control	Cruise Control
0.0	Not Engaged	Off	Not Engaged	Off	Not Engaged	Off

Crash

The crash included three events. Initially, the front plane of the Civic struck the back plane of the Cadillac SRX (Event 1). Both vehicles came to rest facing westbound in their original lane. That event was followed by a front-to-back impact where the front plane of the Accord struck the back plane of the Civic (Event 2). The driver stated during the interview that she observed the crash ahead, braked in response, and determined she could not change lanes due to heavy traffic in the lanes adjacent to her lane. She stated that no crash avoidance alerts were activated and that her braking input failed to slow the vehicle speed.

The Accord and Civic came to rest facing westbound in their original lane. The second event was followed by an angled impact where the (police-reported) right plane of the unidentified vehicle struck the left plane of the Accord (Event 3). This was a non-deployment event not captured by the Accord's EDR.

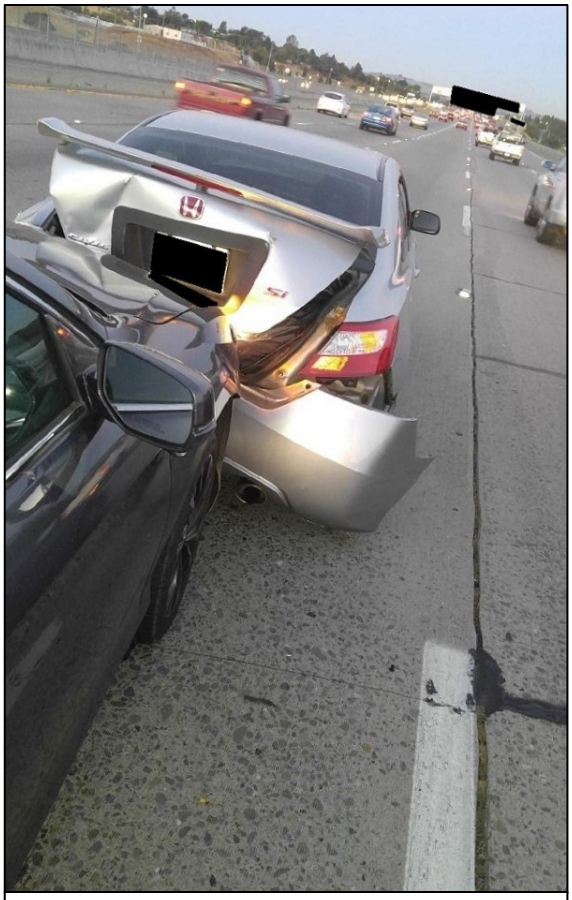


Figure 3. On-scene looking west, the Accord (left) and the Civic. (Accord owner photo.)

For Event 2, the Accord's EDR reported a maximum longitudinal deltaV of -19 km/h (-12 mph) at 132.5 milliseconds (ms) and a maximum lateral delta V of 0 km/h at 37.5 ms. The CDC-only algorithm of the WinSMASH program calculated a total delta V of 17 km/h (11 mph), longitudinal delta V of -17 km/h (-11 mph), lateral delta V of 0 km/h and a barrier equivalent speed (BES) of 13 km/h (8 mph). For the Civic in Event 2, WinSMASH calculated a total delta V of 22 km/h (14 mph), longitudinal delta V of 22 km/h (14 mph), lateral delta V of 0 km/h, and a BES of 26 km/h (16 mph). The WinSMASH results appeared reasonable.

For the Accord in Event 3, the unidentified vehicle was out of scope for WinSMASH. This minor severity non-deployment event was not captured by the EDR. The barrier algorithm of WinSMASH calculated a total delta V of 8 km/h (5 mph), longitudinal delta V of 8 km/h (5 mph), lateral delta V of 3 km/h (2 mph), and a BES of 8 km/h (5 mph). The WinSMASH results for Event 3 appeared reasonable and were included for informational purposes.

Post-Crash

Following the crash, the Accord and Civic came to rest engaged (**Figure 3**). The driver of the Accord exited the vehicle unassisted through the left door. The drivers of the Cadillac and the unidentified vehicle both fled the scene in their vehicles. The Accord and the Civic remained on-scene and were towed due to damage. Neither driver was injured.

2017 HONDA ACCORD

Description

The 2017 Honda Accord was a 2-door coupe identified by the Vehicle Identification Number (VIN): 1HGCT2B96HAxxxxxx. The vehicle was manufactured in May 2017. The odometer reading at the time of the crash was 25,908 km (16,099 mi). The Accord was equipped with a 6-cylinder, 3.5-liter, gas engine; front-wheel drive; antilock brakes; and a tilt/telescoping steering column. The vehicle manufacturer recommended size is 235/45R18 tires with a recommended pressure of 33 psi (225 kPa) for the front and 32 psi (220 kPa) for the rear. It was equipped with Michelin Primacy tires of the recommended size manufactured in 03/2017. Additional vehicle specifications are included in the Crash Avoidance Technology discussion section of this report. The Accord was configured with two rows of seating for five occupants. The front row was equipped with bucket seats and adjustable head restraints, and the driver's seat cushion was set to the middle track.

Exterior Damage

The Accord sustained minor severity damage to the front plane in Event 2 and minor severity damage to the left plane in Event 3. Several components were removed during a partial post-impact tear down including the front bumper fascia, bumper backing bar, grille, radiator, headlamps, hood, left rearview mirror, and left front fender. During the vehicle inspection, the backing bar was repositioned for the purpose of measuring crush. For Event 2, direct damage to the front plane was distributed across the length of the backing bar and measured 106 cm (41.7 in); the Field L also measured 106 cm (41.7 in). Twelve crush measurements were taken at bumper level in 10.0 cm (3.9 in) increments using a Nikon Total Station and the Faro Blitz program computed six crush measurements as follows: C_1 = 2 cm (0.8 in), C_2 = 1 cm (0.4 in), C_3 = 0 cm, C_4 = 0 cm, C_5 = 0 cm, and C_6 = 0. Maximum crush was located at the front left bumper corner, and the collision deformation classification (CDC) for the Accord in Event 2 was 12FDEW1 (**Figure 4**).

Figure 4. Front plane damage, the 2017 Honda Accord.

For Event 3, damage on the left plane began 47 cm (18.5 in) aft of the left rear axle, extended forward 154 cm (60.6 in) and ended 107 cm (42.1 in) forward of the left rear axle. Maximum crush was located 27 cm (9.4 in) aft of the left rear axle, and the CDC for the Accord in Event 3 was 07LZEW1.

Event Data Recorder

The Accord's EDR was imaged using the data link connector (DLC) method with CDR version 17.9.1. CDR version 19.6 was used to report the data. The EDR report included system status, deployment data, pre-crash data, and longitudinal and lateral delta V, and longitudinal, lateral and normal acceleration. The pre-crash section included crash avoidance data for FCW, CMBS, LDW, road departure mitigation, adaptive cruise control, and lane keeping assist.

The EDR report indicated that the ignition cycle at crash was 886 and that the ignition cycle at download was 907. During the SCI vehicle inspection, the OEM downloaded additional electronic data which may have accounted for multiple ignition cycles occurring between crash and download. It was unknown what other post-crash activities may have accounted for additional ignition cycles. The EDR captured one deployment event record for the crash, which was the front-to-back impact involving the Accord and Civic. The event record indicated the Accord driver's seat belt was buckled, the seat track was not in the foremost position, and the air bag warning lamp was "off." It indicated the driver's advanced frontal air bag deployed in a two-stage deployment occurring at 54 ms and 91 ms, respectively. Her seat belt pretensioner actuated at 41 ms. The EDR-reported maximum longitudinal delta V was -19 km/h (-12 mph) at 132.5 ms and the maximum lateral delta V was 0 km/h at 37.5 ms.

The EDR report included data relevant to the vehicle's crash avoidance systems as well as driver input which influenced the systems' functionality. The report indicated the vehicle's CMBS was "On" and "Not Engaged," and FCW was "On" and "Not Warning" prior to impact. The road departure Mitigation and Lane Departure Warning were "Off" prior to impact. The report indicated the driver was actively braking from T-5.0 seconds to T-1.5 seconds and the vehicle speed slowed from 85 km/h (53 mph) to 34 km/h (21 mph) during that span. Steering input fluctuated between -5 and 5 degrees,[5] ABS was "Off" and the Stability Control system was "On, Non-Engaged." Cruise Control was "Off" and the Powertrain Control Module (PCM) derived accelerator pedal position was 0 percent full. The data indicated that the driver was not accelerating, was applying constant brake pressure, and traveling in a relatively straight path while the vehicle continued to decelerate.

At T-1.0 seconds, the driver ceased braking and accelerated increasing the vehicle speed to 37 km/h (23 mph) while increasing her steering input to -15 degrees (clockwise) at T-0.0 seconds.

Crash Avoidance Technology Discussion

The Accord was equipped with crash avoidance technology including forward collision warning (FCW) with CMBS, and lane departure warning (LDW) with lane keeping. The vehicle's EDR reported that the FCW with CMBS was "On" (enabled) and the LDW with lane keeping was "Off" (disabled) at the time of the crash.

The vehicle owner's manual states that the CMBS can assist the driver when there is a possibility of colliding with a vehicle or a pedestrian detected in front of the vehicle. It states that the system can give visual, audible, and tactile alerts when a potential collision is determined, and reduce vehicle speed to help minimize collision severity when a collision is deemed unavoidable. It

[5] Steering input angle is recorded in 5 degree increments.

states that when a potential collision with a detected oncoming vehicle is determined, a "BRAKE" message appears in the multi-information display, the head-up warning lights flash, a beep sounds, and the steering wheel vibrates. According to the manual, the CMBS activates when:

- The speed difference between your vehicle and a vehicle or pedestrian detected in front of you is about 3 mph (5 km/h) and over with a chance of a collision; or

- The vehicle speed is about 62 mph (100 km/h) or less and there is a chance of a collision with an oncoming detected vehicle or a pedestrian in front of the vehicle.

The manual includes a safety reminder as follows: CMBS "is designed to reduce the severity of an unavoidable collision. It does not prevent collisions nor stop the vehicle automatically. It is still your responsibility to operate the brake pedal and steering wheel appropriately according to the driving conditions."

The system has three alert stages for a possible collision **(Figure 5)**. Depending on the circumstances or CMBS settings, CMBS may not go through all the stages before initiating the last stage.

Stage 1: Visual and audible warning, steering wheel vibrations.
Stage 2: Visual and audible warning, light brake application.
Stage 3: Visual and audible warning, strong brake application.

The system uses a radar unit and camera to gauge the distance from a detected vehicle. The radar unit is mounted on the front aspect of the vehicle directly below the license plate. The camera is mounted to the middle aspect of the windshield. The driver has the option to change the settings for the FCW warning timing by selecting a distance of long, normal, or short. When the system is turned on, either by starting the engine or by manually pressing the on/off button, the default distance is set to normal. The vehicle owner stated neither he nor the driver ever set the distance since the time of purchase and the setting at the time of the crash was unknown. The driver of the Accord stated during the interview that no warnings or alerts occurred prior to impact.

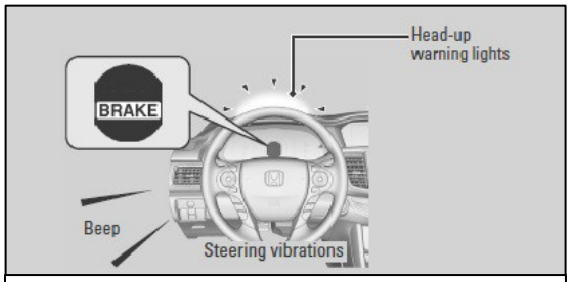


Figure 5. CMBS alerts, the 2017 Honda Accord (vehicle owner's manual image).

The Honda technician imaged six reports using the Denso Vehicle Communication Interface (VCI) tool with Honda proprietary software including an all diagnostic trouble code (DTC) check, CMBS history, (IDAS) DTCs, IDAS freeze data, programmed fuel injection (PGMFI) DTCs, and PGMFI freeze data. The CMBS history captured five instances in which the CMBS was engaged, identifying each using odometer readings as follows:

- 6,984 miles
- 9,068 miles

- 11,448 miles
- 12,844 miles
- 16,036 miles

At the time of the crash, the Accord's odometer reading was 16,098 miles, or 62 miles after the most recent CMBS engagement.

The DTC-related reports either were not time stamped or captured data relative to the vehicle's post-impact status. The vehicle's EDR report did not include any DTC data, but did indicate the CMBS was "On" at the time of the crash. Consequently, no data was available indicating DTCs existed prior to the crash which may have affected the CMBS.

The investigation determined the CMBS did not activate or provide warnings or braking assistance prior to impact, based on the following evidence.

- The EDR report indicated in the pre-crash data that FCW and CMBS were "On" and "Not Warning."

Given the crash configuration and speed difference between the Accord and the Civic, it would appear that the scenario met the CMBS activation conditions as stated in the Accord owner's manual. The EDR report indicated the driver applied constant braking from T-5.0 seconds to T-1.5 seconds and the vehicle speed slowed from 85 km/h (53 mph) to 34 km/h (21 mph). From T-1.0 seconds to AE, the service brake was "off" and vehicle speed increased from 34 km/h (21 mph) to 37 km/h (23 mph). The CMBS did not activate while braking was applied or not applied by the driver. It is not known if the brake assist system provided additional braking force while the driver was braking. The calculated deceleration rate was approximately 0.3 g's[6] for this crash while the maximum braking for this vehicle is approximately 0.9 g's.

According to the OEM, the FCW and CMBS functionality for the Accord was as follows:

- Activation Timing
  Alert (Honda's FCW): TTC[7] = 2.5−2.0s
  AEB[8] (Honda's CMBS): TTC = 1.5−1.0s

- Influence from service brake application
  CMBS operation is suppressed.
  CMBS operation continues to be suppressed for 1 to 3 seconds after the brake G is lost.

- If not on the service brake and AEB activates, followed by a subsequent application of the service brake, AEB will become suppressed.

[6] a = Ve - Vi / T. a = 30.8 fps - 77.3 fps / 4 seconds = -11.62 f/s/s = -0.36 g.
[7] time to collision.
[8] autonomous emergency braking system.

According to EDR data, the driver of the Accord applied the service brake from T-5.0s to T-1.5s, and during the subsequent three time stamps, from T-1.0s to T-0.0s, the service brake was "Off." At time stamp T-1.0s, the driver engaged the accelerator pedal, and from T-1.5s to T-0.0s, the driver steered slightly right. Based on the OEM explanation of the FCW and CMBS functionality, the service brake application suppressed the FCW and CMBS, and they remained so during the final 1.0 second prior to impact because the CMBS will not activate for 1-3 seconds after brake application ceases. Given the system parameters as defined by the OEM, neither the distance between the Accord and Civic, accelerator input or steering input by the driver of the Accord had any effect on the functionality of the FCW or CMBS.

Interior Damage

The Accord's interior sustained minor severity damage caused by impact forces, an air bag deployment, and a seat belt pretensioner actuation. The doors and windows were unremarkable and no intrusions were documented. The doors remained closed and operational and the front row left and right side glazing was disintegrated. There were no intrusions or occupant contacts documented.

Manual Restraint Systems

The Accord was equipped with driver and front passenger lap and shoulder seat belts. The driver's belt was equipped with continuous loop belt webbing, a sliding latch plate, an emergency locking retractor, and a non-adjustable D-ring upper anchor. The driver was belted at the time of the crash as indicated by the EDR data, evidence of loading to the driver's seat belt, and the actuated pretensioner which locked the belt in the used position.

Supplemental Restraint Systems

The Accord's supplemental restraint systems included frontal, seat-mounted side impact, and combination roll-sensing/side impact inflatable curtain (IC) air bags for the driver and front right occupant seat positions. The driver's frontal air bag deployed during the crash in two stages. This air bag revealed no damage or occupant contact.

NHTSA Recalls and Investigations

A search last queried in December 2020 using the Accord's VIN revealed one open recall as follows:

NHTSA Recall Number: 19V-060

Manufacturer Recall Number: N3X

Recall Date: January 29, 2019

Summary: Fuels containing high sodium content can contaminate certain internal components in the fuel pump and reduce fuel flow to the engine.

Safety Risk: Reduced fuel flow to the engine combined with vehicle operation in high temperature conditions can restrict vehicle acceleration and/or cause an engine stall, which increases the risk of a crash.

Remedy: Software update for engine control unit and, if a diagnostic scan confirms a previous occurrence of engine stalling, replacement of the fuel pump.

Recall Status: Recall Incomplete.

2017 HONDA ACCORD OCCUPANT

Driver Demographics

Age/sex:	48 years/female
Height:	173 cm (68 in)
Weight:	83 kg (182 lb)
Eyewear:	Eyeglasses
Seat type:	Bucket with adjustable head restraint
Seat track position:	Middle track
Manual restraint usage:	Lap and shoulder seat belt
Usage source:	Vehicle inspection, EDR report
Air bags:	Frontal air bag deployed; seat-mounted and IC air bags did not deploy
Alcohol/drug data:	None
Egress from vehicle:	Exited unassisted through left side door
Transport from scene:	None
Type of medical treatment:	None

Driver Injuries

The driver was not injured.

Driver Kinematics

The belted 48-year-old female driver was seated in an upright posture and steering with both hands on the wheel. At impact with the Civic, the driver's frontal air bag deployed in two stages and her seat belt pretensioner actuated. She was displaced forward in response to the direction of force, loading the seat belt with her chest and possibly loading the deployed air bag with chest, neck, and face. Following the first impact, an unidentified vehicle traveling in the lane left of the Accord struck the Accord in the left plane rearward of the left B-pillar. This was a minor severity, non-deployment impact which had minimal effect on the Accord driver's kinematics or trajectory of the Accord. The driver remained in place in her seated position until the Accord came to rest in the area of the impacts. She was not injured and exited the vehicle unassisted through the left side door.

2008 HONDA CIVIC

Description

The 2008 Honda Civic Si was identified in the police report. The VIN was 2HGFG21568Hxxxxxx and the date of manufacture was unknown. The Civic was a 2-door coupe configured with a 4-cylinder, 2.0 liter, gasoline engine; a manual 6-speed transmission; and front-wheel drive.

Exterior Damage

A partial inspection of the Civic was based on photographs. The vehicle sustained unknown severity damage to the front plane in Event 1 and moderate severity damage to the back plane in Event 2. The estimated CDC for the Civic in Event 1 was 99F99999, and the estimated CDC for the Civic in Event 2 impact was 06BYEW2. The vehicle was towed due to damage.

Occupant Data
The driver of the Civic was a belted 24-year-old male. He was not injured or transported.

CADILLAC SRX

Description
The Cadillac SRX was identified in the police report. The year model was unknown.

Exterior Damage
The Cadillac sustained unspecified back plane damage caused in Event 1.

Occupant Data
The driver of the Cadillac drove from the crash site in the vehicle prior to the arrival of police and was not identified.

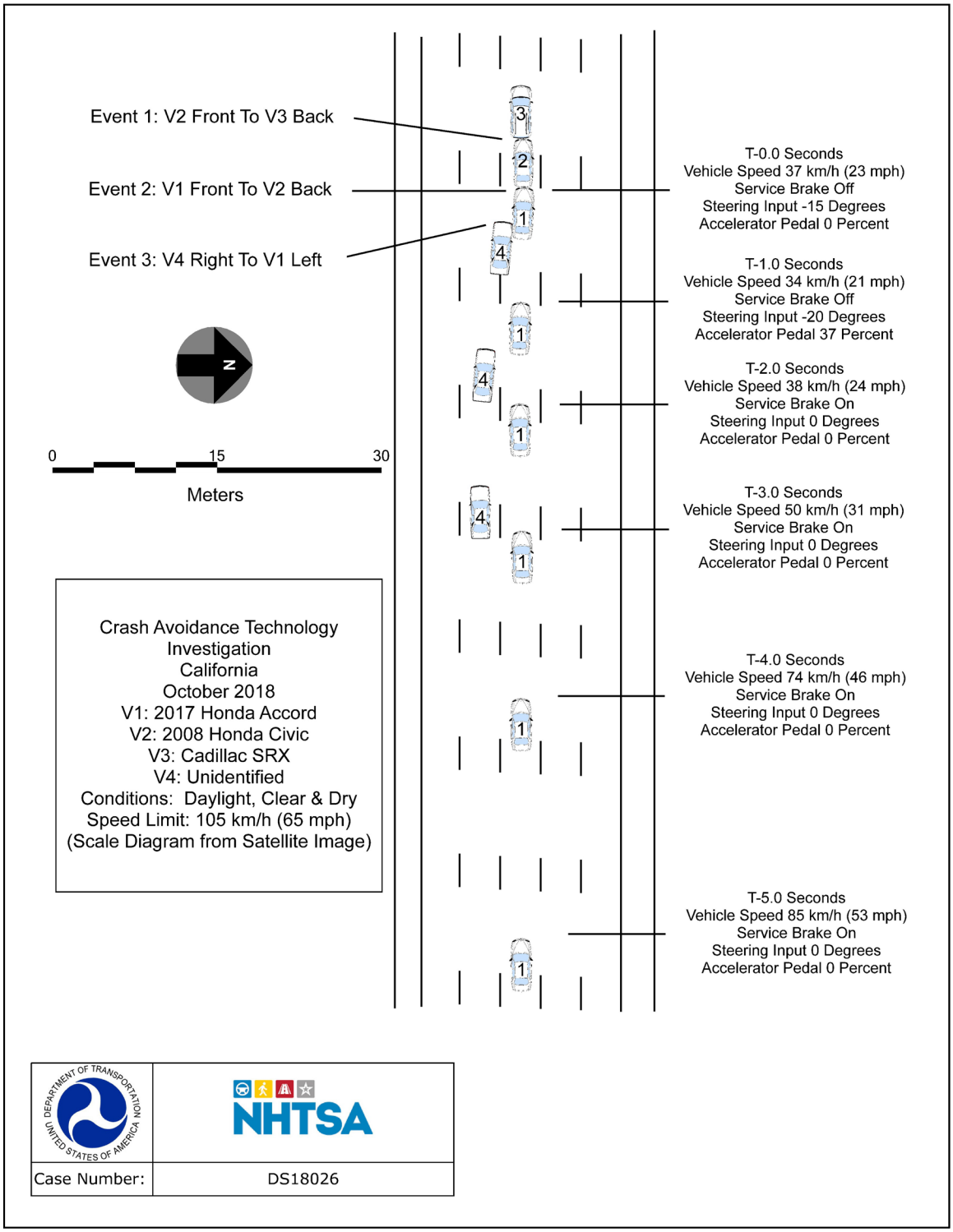
UNIDENTIFIED VEHICLE

Description
The fourth vehicle involved in the crash was not identified.

Exterior Damage
According to the police report, the vehicle sustained damage to the right plane caused in Event 3.

Occupant Data
The driver of the unidentified vehicle drove from the crash site in the vehicle prior to the arrival of the police and was not identified.

CRASH DIAGRAM



APPENDIX A: Event Data Recorder Report for 2017 Honda Accord[9]

[9] The EDR report contained in this technical report was imaged using the current version of the Bosch CDR software at the time of the vehicle inspection. The CDR report contained in the associated crash view application may differ relative to this report.

IMPORTANT NOTICE: Robert Bosch LLC and the manufacturers whose vehicles are accessible using the CDR System urge end users to use the latest production release of the Crash Data Retrieval system software when viewing, printing or exporting any retrieved data from within the CDR program. Using the latest version of the CDR software is the best way to ensure that retrieved data has been translated using the most current information provided by the manufacturers of the vehicles supported by this product.

CDR File Information

User Entered VIN	1HGCT2B96HA******
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	DS18026_V1_ACM.CDRX
Saved on	
Imaged with CDR version	Crash Data Retrieval Tool 17.9.1
Imaged with Software Licensed to (Company Name)	NHTSA
Reported with CDR version	Crash Data Retrieval Tool 19.6
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
Event(s) recovered	1

Comments

No comments entered.

Data Limitations

General Information:

These limitations are intended to assist you in reading the event data that has been imaged from the vehicle's SRS control unit. They contain general information and are not specific to this particular event. Event data should be considered in conjunction with other available physical evidence from the vehicle and scene.

Honda and Acura passenger vehicles designated as 2013 or later model year production are designed to be compatible with the Bosch CDR tool. Only some 2012 model year vehicles are compatible with the Bosch CDR tool.

Recorded Crash Events:

Data for front, side, rear and rollover events can be recorded as either non-deployment or deployment events. Both types of events can contain pre-crash and crash data.

- A non-deployment event is recorded if the change in longitudinal or lateral velocity equals or exceeds 8km/h over a 150ms timeframe or another type of non-reversible deployable restraint device other than a front, side, or side curtain airbag (e.g. seatbelt pretensioner) is commanded to deploy. Except as indicated below, non-deployment events are not locked into memory and can be over-written by subsequent non-deployment or deployment events.
- A deployment event is recorded if front airbag(s), side airbag(s), or side curtain airbag(s) are commanded to deploy. Deployment events are locked into memory and cannot be over-written.

The SRS control unit typically records only one event. Two events can be recorded if the T0 (time zero) values for each event occur within 5 seconds of each other. Therefore, a non-deployment event can be recorded and locked if it occurs within 5 seconds of a deployment event.

T0 is established by whichever of the following occurs first: (1) the change in longitudinal velocity at the SRS control unit equals or exceeds 0.8km/h over a 20ms timeframe; or (2) the change in lateral velocity at the SRS control unit equals or exceeds 0.8km/h over a 5ms timeframe; or (3) the occupant restraint control algorithm is activated; or (4) a commanded deployment of any type of non-reversible deployable restraint device (e.g. airbag or seatbelt pretensioner). If the time to deploy equals 0, then the command to deploy occurred at T0 or the device was not commanded to deploy during the event.

TEnd (end of event) is established by whichever of the following occurs first: (1) the change in longitudinal and lateral Delta V equals or falls below 0.8km/h over a 20ms timeframe; or (2) the occupant restraint control algorithm resets; or (3) time from T0 exceeds 300ms.

Data:

- Data recorded by the SRS control unit and imaged by the CDR tool is displayed relative to T0, not the time at which the vehicle made contact with another vehicle or object.
- Pre-crash data is recorded at 2 samples per second within the 5 seconds before T0. The sampling point at 0.0 is taken at T0 and is asynchronous with the other sample points. The time between -0.5 and 0.0 is not recorded and is between 1 and 500ms.
- Delta V data is recorded at 100 samples per second from T0 to 250ms or T0 to TEnd plus 30ms.
- Acceleration data is recorded at 100 samples per second from T0 to 250ms.
- Delta V, longitudinal reflects the change in velocity that the SRS control unit experienced in the longitudinal direction during the recorded portion of the event and is not the speed the vehicle was traveling before the event.
- Depending on the severity of the event and the accelerometer characteristics, saturation of the SRS control unit longitudinal or lateral accelerometers may occur, decreasing the recorded Delta V value.

- Time, accelerometer range exceeded is recorded if saturation of the SRS control unit longitudinal, lateral and/or normal (vertical) accelerometer occurs. The recorded data is the time at which the sensor range is first exceeded.
- The maximum recording capability of Deployment Command Data is 254ms or 255ms depending on vehicle model. A recorded value of 254ms or 255ms may indicate that the recording maximum was exceeded. In this case, the deployment command may have occurred between the recorded time and TEnd.
- Speed, vehicle indicated data is the speed indicated to the driver by the speedometer, not actual vehicle ground speed. Data accuracy can be affected by various factors, including but not limited to the following:
    - Significant changes in tire size from the factory setting
    - Wheel lockup or spin
    - Data latency or filtering and hysteresis within the speedometer module
- Accelerator pedal position, percent full is the ratio of accelerator pedal position compared to the fully depressed position.
- PCM (Powertrain Control Module) derived accelerator pedal position, percent full may differ from the accelerator pedal position, percent full under circumstances such as brake override activation or cruise control system engagement. These circumstances are based on vehicle equipment application and vary by model.
- Steering input angle is recorded in 5 degree increments.
- Side air bag suppression system status, right front passenger is recorded when the vehicle is equipped with the Occupant Position Detection System (OPDS).
- Occupant size classification, right front passenger airbag suppressed data is recorded as yes (suppressed) if the front passenger seat weight sensor system determined the passenger seat was empty or occupied by a child-size occupant.
- EV mode data records the vehicle powertrain status, not a driver selected operation mode. EV mode is recorded as On when the vehicle is moving and the internal combustion engine is not operating. EV mode may be recorded as On or Off when the vehicle is stopped.
- If power to the SRS control unit is lost during an event, all or part of the data may not be recorded.

Roll Rate Data:
- Vehicle roll rate data is recorded separately from the non-deployment and deployment events as described above. Therefore, the T0 for the roll rate data may differ from the T0 for the other data in this report.
- Roll rate recording trigger (T0) is established by whichever of the following occurs first: (1) a rollover algorithm ON judgment (SRS control unit decision to command deployment);, or (2) a change in relative roll angle at the SRS control unit equal to or exceeding 30 degrees (roll angle is not measured, but is calculated from the roll rate data); or (3) the rollover algorithm is activated.
- Once a recording trigger has been met, roll rate data is recorded for one rollover event at 10 samples per second from 1 second before to 2 seconds after T0. If a roll angle trigger is satisfied without a rollover algorithm ON judgment, the recorded roll rate data is unlocked and can be over-written by a subsequent rollover event. Roll rate data triggered by or recorded during a rollover algorithm ON judgment is locked into memory and cannot be over-written.
- If roll rate is detected at the SRS control unit during a non-deployment or deployment event but the recording trigger has not been satisfied, no roll rate data will be recorded. A graph of roll rate data will only be present in this report if roll rate data is recorded.

Data Element Sign Convention:
Except as noted below, all data is displayed in SAE J211 sign convention. The following table provides an explanation of the sign notation for data elements that may be included in this CDR report. All directional references to sign notation are from the perspective of the driver when seated in the vehicle facing the direction of forward vehicle travel.

Data element name	Positive sign indicates
Longitudinal Acceleration	Forward direction acceleration
Delta-V, Longitudinal	Forward direction acceleration
Lateral Acceleration	Left to right direction acceleration
Delta-V, Lateral	Left to right direction acceleration
Normal (Vertical) Acceleration	Downward direction acceleration
Vehicle Roll Rate*	See roll rate graph and data (if recorded)
Steering Input Angle*	Left Turn

*Not SAE J211 sign convention

Data Source:
All recorded data is measured and calculated within the SRS control unit except for the following parameters (if applicable) which are transmitted via the vehicle's communication network to the SRS control unit:
- Speed, vehicle indicated
- Accelerator pedal position, percent full
- Service brake
- ABS activity
- Stability control
- Steering input angle
- Engine RPM
- PCM derived accelerator pedal position, percent full
- EV mode
- Forward Collision Warning
- Collision Mitigation Braking System information
- Lane Keeping Assist System information
- Lane Departure Warning
- Road Departure Mitigation information
- Cruise Control status
- Adaptive Cruise Control status

Depending on vehicle feature content, capability, or conditions described above, the following items may not be recorded. If these items are not recorded, they will not be present in this document.
- EV mode

- Forward Collision Warning
- Collision Mitigation Braking System information
- Lane Keeping Assist System information
- Lane Departure Warning
- Road Departure Mitigation information
- Cruise Control status
- Adaptive Cruise Control status

Hexadecimal Data:
All data that has been specified for imaging is shown in the hexadecimal data section of this report. However, not all of this data is translated by the CDR tool. The SRS control unit may contain additional data that is not retrievable by the CDR tool.

Data Imaging:
If the SRS control unit is imaged outside of the vehicle, ensure that it is not moved, tilted or turned while connected to the CDR tool. Also, after imaging is complete, wait 3 minutes after removing the CDR tool before moving the SRS control unit. Not following this guideline could cause current non-deployment event data to be overwritten and a new event to be recorded. Current fault status could also be altered if the SRS control unit is imaged outside of the vehicle.

04002_HondaSRS_GEN2_r002

System Status at Retrieval

EDR Version	1.3.4.0

System Status at Event (Event Record 1)

Multi-Event, Number of Events (1, 2)	1
Complete File Recorded (Yes/No)	Yes
Ignition Cycle, Download	907
Maximum Delta-V, Longitudinal (MPH [km/h])	-12 [-19]
Time, Maximum Delta-V, Longitudinal (msec)	132.5
Maximum Delta-V, Lateral (MPH [km/h])	0 [0]
Time, Maximum Delta-V, Lateral (msec)	37.5
Time, Maximum Delta-V, Resultant (msec)	132.5
Time, Accelerometer Range Exceeded, Longitudinal (msec)	0
Time, Accelerometer Range Exceeded, Lateral (msec)	0
Time, Accelerometer Range Exceeded, Normal (msec)	19.0

Deployment Command Data (Event Record 1)

Pretensioner Deployment, Time to Fire, Driver (msec)	41
Pretensioner Deployment, Time to Fire, Right Front Passenger (msec)	0
Frontal Air Bag Deployment, Time to Deploy First Stage, Driver (msec)	54
Frontal Air Bag Deployment, Time to Deploy First Stage, Right Front Passenger (msec)	0
Frontal Air Bag Deployment, Time to 2nd Stage, Driver (msec)	94
Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (msec)	0
Side Air Bag Deployment, Time to Deploy, Driver (msec)	0
Side Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	0
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Driver Side (msec)	0
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Right Side (msec)	0
Frontal Air Bag Deployment, 2nd Stage Disposal, Driver (Yes/No)	No
Frontal Air Bag Deployment, 2nd Stage Disposal, Right Front Passenger (Yes/No)	No

Pre-Crash Data -1 sec (Event Record 1)

Safety Belt Status, Driver	On
Safety Belt Status, Right Front Passenger	Off
Seat Track Position Switch, Foremost, Status, Driver	No
Occupant Size Classification, Right Front Passenger Airbag Suppressed (Yes/No)	Yes
Frontal Air Bag Warning Lamp (On, Off)	Off
Ignition Cycle, Crash	886

Pre-Crash Data -5 to 0 sec [2 samples/sec] (Event Record 1) - Table 1 of 3

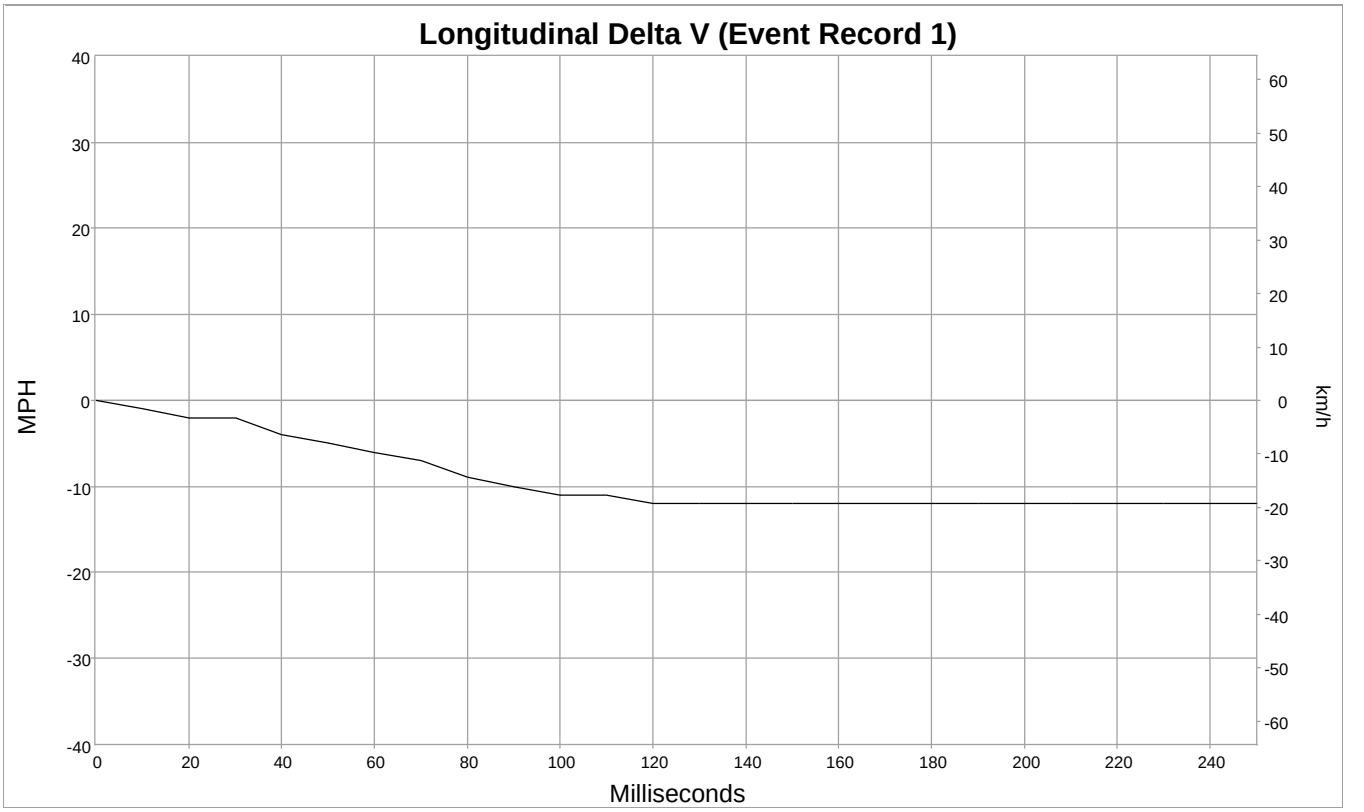
Time Stamp (sec)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal Position, % full	Service Brake (On, Off)	ABS Activity (On, Off)	Stability Control (On, Off, Engaged)	Steering Input (deg)	Engine RPM
-5.0	53 [85]	0	On	Off	On Non-Engaged	0	1,400
-4.5	51 [82]	0	On	Off	On Non-Engaged	0	1,300
-4.0	46 [74]	0	On	Off	On Non-Engaged	0	1,300
-3.5	37 [60]	0	On	Off	On Non-Engaged	5	1,200
-3.0	31 [50]	0	On	Off	On Non-Engaged	0	1,000
-2.5	27 [43]	0	On	Off	On Non-Engaged	0	1,100
-2.0	24 [38]	0	On	Off	On Non-Engaged	0	1,200
-1.5	21 [34]	0	On	Off	On Non-Engaged	-5	1,100
-1.0	21 [34]	37	Off	Off	On Non-Engaged	-20	1,300
-0.5	22 [36]	0	Off	Off	On Non-Engaged	-20	2,800
0.0	23 [37]	0	Off	Off	On Non-Engaged	-15	2,500

Pre-Crash Data -5 to 0 sec [2 samples/sec] (Event Record 1) - Table 2 of 3

Time Stamp (sec)	PCM Derived Accelerator Pedal Position, % full	Forward Collision Warning (Not Warning/ Warning)	Collision Mitigation Braking System (Not Engaged/ Engaged)	Collision Mitigation Braking System, Forward Collision Warning (On/Off)	Lane Departure Warning (Not Warning/ Warning)	Road Departure Mitigation (Not Engaged/ Engaged)	Road Departure Mitigation, Lane Departure Warning (On/Off)
-5.0	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
-4.5	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
-4.0	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
-3.5	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
-3.0	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
-2.5	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
-2.0	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
-1.5	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
-1.0	30	Not warning	Not engaged	On	Not warning	Not engaged	Off
-0.5	0	Not warning	Not engaged	On	Not warning	Not engaged	Off
0.0	0	Not warning	Not engaged	On	Not warning	Not engaged	Off

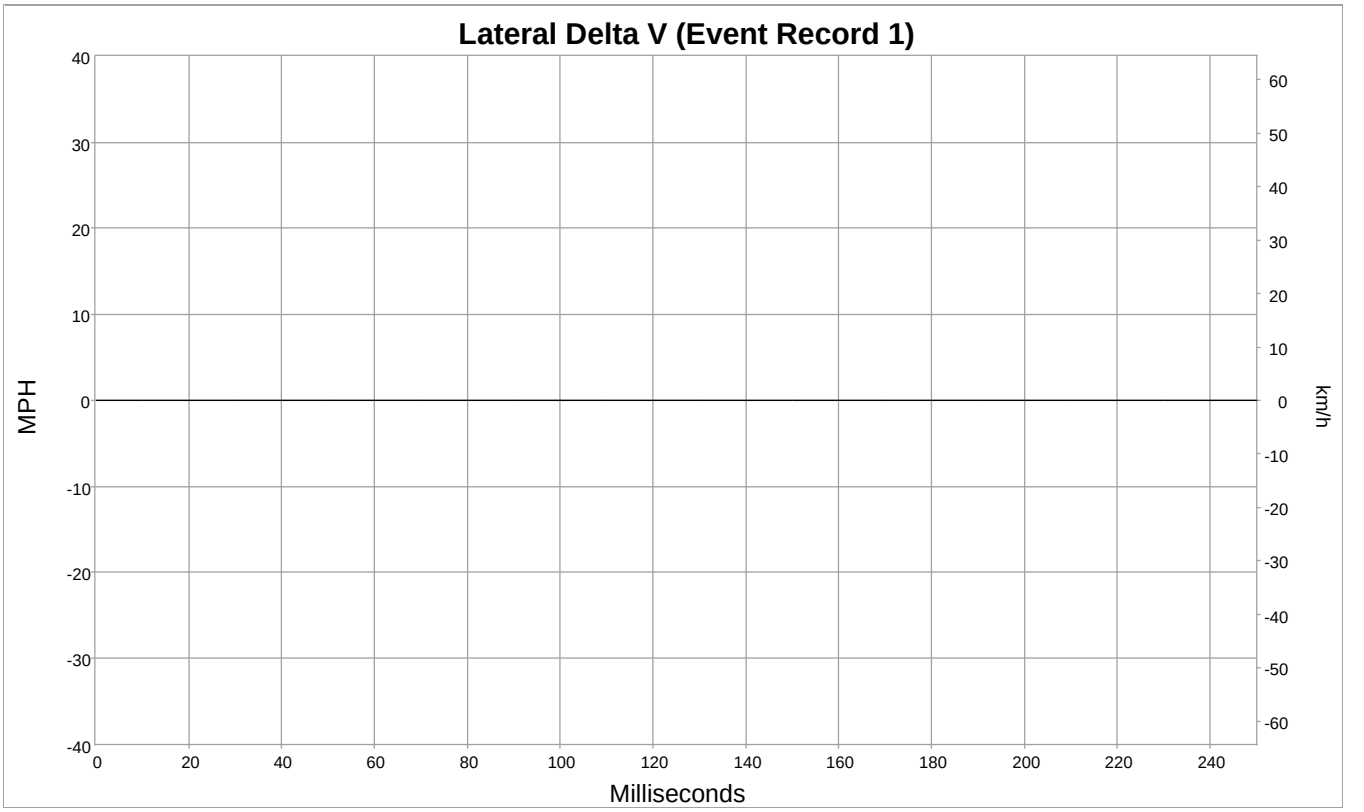
Pre-Crash Data -5 to 0 sec [2 samples/sec] (Event Record 1) - Table 3 of 3

Time Stamp (sec)	Adaptive Cruise Control (Not Engaged/ Engaged)	Adaptive Cruise Control (On/Off)	Lane Keeping Assist (Not Engaged/ Engaged)	Lane Keeping Assist (On/Off)	Cruise Control (Not Engaged/ Engaged)	Cruise Control (On/Off)
-5.0	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-4.5	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-4.0	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-3.5	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-3.0	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-2.5	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-2.0	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-1.5	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-1.0	Not engaged	Off	Not engaged	Off	Not Engaged	Off
-0.5	Not engaged	Off	Not engaged	Off	Not Engaged	Off
0.0	Not engaged	Off	Not engaged	Off	Not Engaged	Off



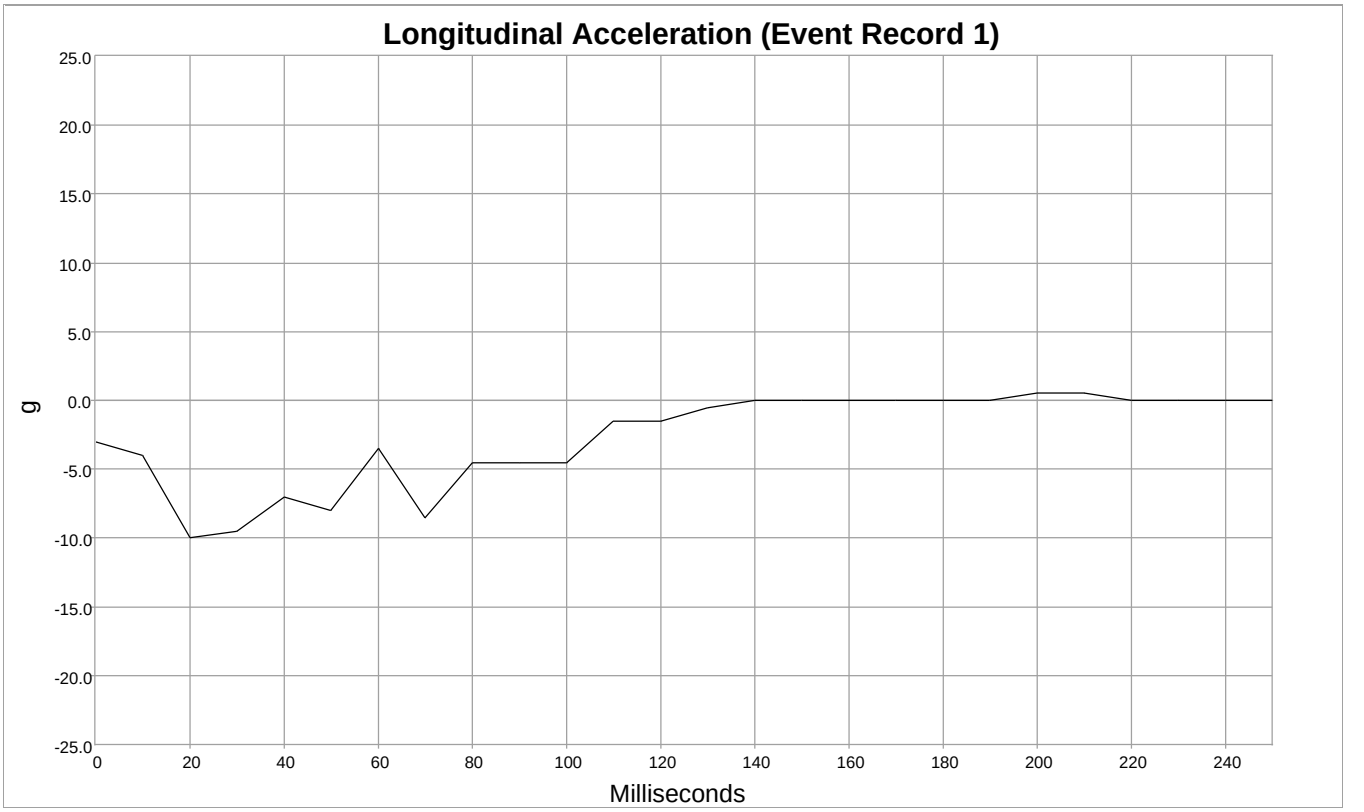
Longitudinal Delta V (Event Record 1)

Time (msec)	MPH [km/h]
0	0 [0]
10	-1 [-2]
20	-2 [-3]
30	-2 [-4]
40	-4 [-6]
50	-5 [-8]
60	-6 [-10]
70	-7 [-12]
80	-9 [-14]
90	-10 [-16]
100	-11 [-17]
110	-11 [-18]
120	-12 [-19]
130	-12 [-19]
140	-12 [-19]
150	-12 [-19]
160	-12 [-19]
170	-12 [-19]
180	-12 [-19]
190	-12 [-19]
200	-12 [-19]
210	-12 [-19]
220	-12 [-19]
230	-12 [-19]
240	-12 [-19]
250	-12 [-19]



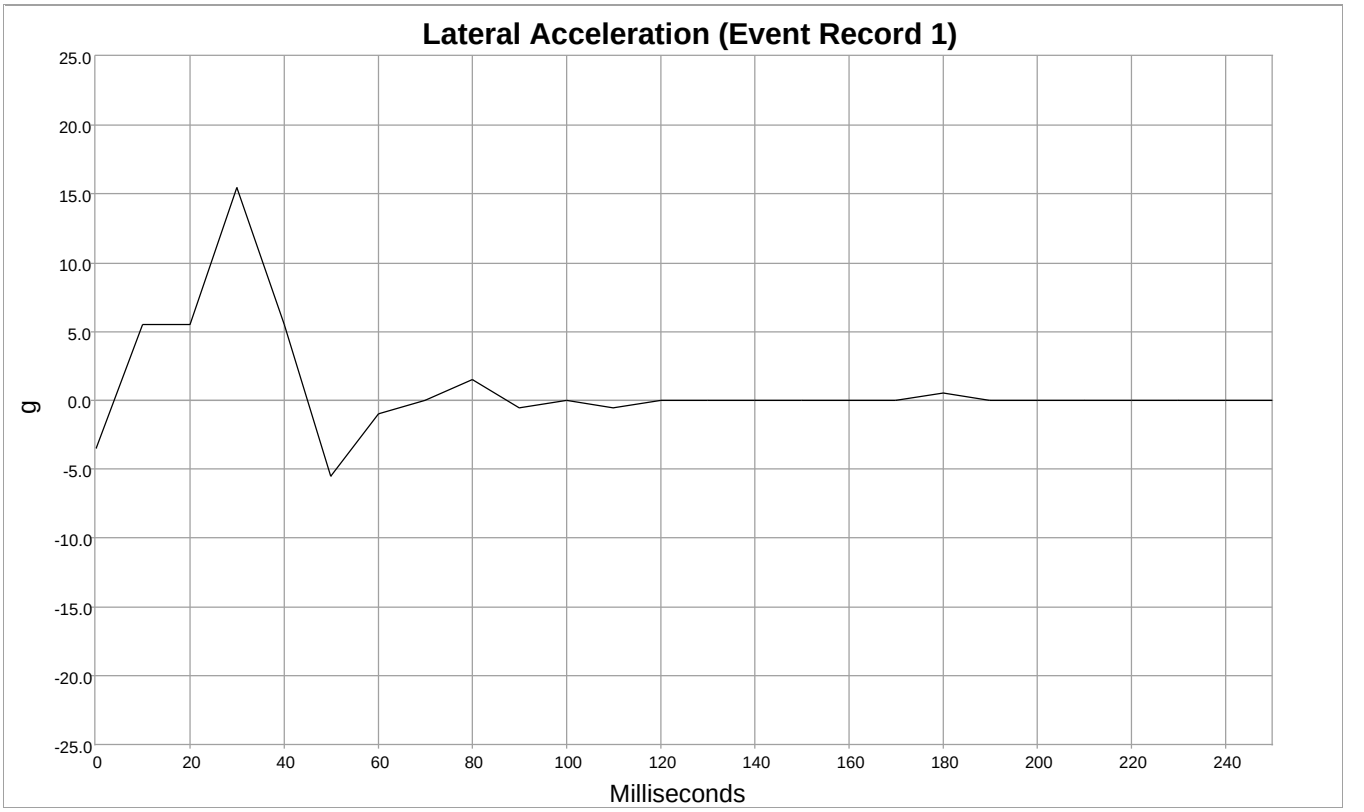
Lateral Delta V (Event Record 1)

Time (msec)	MPH [km/h]
0	0 [0]
10	0 [0]
20	0 [0]
30	0 [0]
40	0 [0]
50	0 [0]
60	0 [0]
70	0 [0]
80	0 [0]
90	0 [0]
100	0 [0]
110	0 [0]
120	0 [0]
130	0 [0]
140	0 [0]
150	0 [0]
160	0 [0]
170	0 [0]
180	0 [0]
190	0 [0]
200	0 [0]
210	0 [0]
220	0 [0]
230	0 [0]
240	0 [0]
250	0 [0]



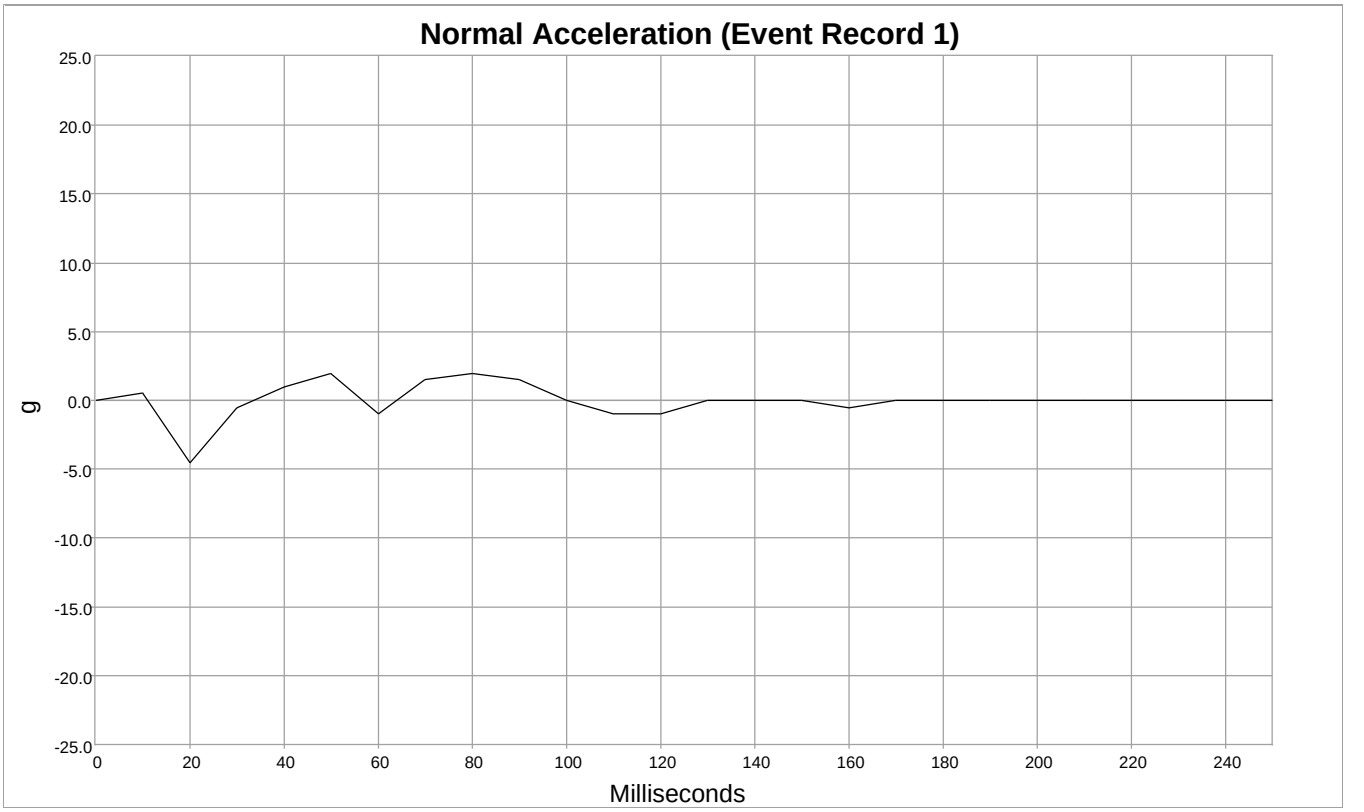
Longitudinal Acceleration (Event Record 1)

Time (msec)	g
0	-3.0
10	-4.0
20	-10.0
30	-9.5
40	-7.0
50	-8.0
60	-3.5
70	-8.5
80	-4.5
90	-4.5
100	-4.5
110	-1.5
120	-1.5
130	-0.5
140	0.0
150	0.0
160	0.0
170	0.0
180	0.0
190	0.0
200	0.5
210	0.5
220	0.0
230	0.0
240	0.0
250	0.0



Lateral Acceleration (Event Record 1)

Time (msec)	g
0	-3.5
10	5.5
20	5.5
30	15.5
40	5.5
50	-5.5
60	-1.0
70	0.0
80	1.5
90	-0.5
100	0.0
110	-0.5
120	0.0
130	0.0
140	0.0
150	0.0
160	0.0
170	0.0
180	0.5
190	0.0
200	0.0
210	0.0
220	0.0
230	0.0
240	0.0
250	0.0



Normal Acceleration (Event Record 1)

Time (msec)	g
0	0.0
10	0.5
20	-4.5
30	-0.5
40	1.0
50	2.0
60	-1.0
70	1.5
80	2.0
90	1.5
100	0.0
110	-1.0
120	-1.0
130	0.0
140	0.0
150	0.0
160	-0.5
170	0.0
180	0.0
190	0.0
200	0.0
210	0.0
220	0.0
230	0.0
240	0.0
250	0.0

Hexadecimal Data

DID #	Data
$8000	41 56 14 15 01 33 00 11 00 55 00 00 11 77 80 00 20 0F 00 E9 02 05 00 00 00 00 00 00 00 00 00 00 12 11 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 5C
$8020	01 03 00 00 00 00 00 00 00 00 00 00 00 00 00 FC
$8021	AA 00 01 00 00 00 00 00 00 00 00 55 03 8B AA 00
$8022	AA 00 C0 78 66 00 00 00 29 00 00 00 00 00 00 00 00 36 00 5E 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 11 00 00 00 00 00 00 00 00 00 00 00 00 00 00 EA
$8023	AA 00 C0 78 66 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 B8
$8024	AA 00 FF 00 00 40 43 02 12 12 11 00 03 76 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 24
$8025	AA 00 FF 00 00 40 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 17
$8026	AA 01 FC D0 35 00 00 77 33 00 30 00 00 00 00 00 55 00 00 0E 00 01 00 00 01 11 00 10 00 00 00 00 52 00 00 0D 00 01 00 00 01 11 00 10 00 00 00 00 4A 00 00 0D 00 01 00 00 01 11 00 10 00 00 00 00 3C 00 01 0C 00 01 00 00 01 11 00 10 00 00 00 00 32 00 00 0A 00 01 00 00 01 11 00 10 00 00 00 00 2B 00 00 0B 00 01 00 00 01 11 00 10 00 00 00 00 26 00 00 0C 00 01 00 00 01 11 00 10 00 00 00 00 22 00 FF 0B 00 01 00 00 01 11 00 10 00 00 00 00 22 1E FC 0D 25 00 00 00 01 11 00 10 00 00 00 00 24 00 FC 1C 00 00 00 00 01 11 00 10 00 00 00 00 25 00 FD 19 00 00 00 00 01 11 00 10 00 00 00 E5
$8027	AA 01 FC D0 35 00 00 77 33 00 30 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 7A
$8028	AA 00 00 FE FD FC FA F8 F6 F4 F2 F0 EF EE ED ED ED ED ED ED ED ED ED ED ED ED ED ED 00 00 00 00 00 00 00 00 00 00 00 00 ED 35 00 00 00 00 00 AC
$8029	AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 56
$802A	AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

```
                00 00 00 00 00 00 00 00 00 0F 00 35 00 00 00 12

$802B           AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 56

$802C           AA 01 FA F8 EC ED F2 F0 F9 EF F7 F7 F7 FD FD FF
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                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 E0

$802D           AA 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00
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$802E           AA 01 F9 0B 0B 1F 0B F5 FE 00 03 FF 00 FF 00 00
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                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 27

$802F           AA 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00
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                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 55

$8030           AA 01 00 01 F7 FF 02 04 FE 03 04 03 00 FE FE 00
                00 00 FF 00 00 00 00 00 00 00 00 00 00 BE 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 97

$8031           AA 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 55

$8007           AA 00 00 00 00 00 00 00 0E 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 F2

$803F           AA 01 00 21 00 00 00 00 00 00 00 00 00 00 00 00
                80 16 07 00 00 00 14 00 00 00 00 00 00 02 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

$8011           AA 01 C4 2F 80 00 00 00 00 01 27 16 00 00 00 16
                00 00 00 00 06 00 10 FF F2 10 FF 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 78

$8012           AA 00 04 17 0D 08 5F 02 32 00 00 00 00 00 00 00
                04 0D 78 06 36 02 32 00 00 00 00 00 00 00 00 00
                00 11 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 89

$8013           AA 01 C4 2F 80 00 00 00 00 01 00 00 00 00 00 00
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                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 E1

$8014           AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
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                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 56

$8015           AA 01 C4 2F 80 00 00 00 00 01 00 00 00 00 00 00
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                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 E1

$8016           AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 56
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               00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
               00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
               00 00 00 00 00 00 00 00 00 E1

$8018          AA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
               00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 56

$8019          AA 01 C4 2F 83 10 BE 00 00 01 00 00 00 00 00 00
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$8002          AA 01 E0 FE F8 00 00 00 00 80 31 00 00 00 00 00
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$8005          AA 00 F8 FF FF FF DE F1 DE F1 80 00 00 00 00 00
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               FF B6 00 04 83 FC 86 00 FB AE 02 FF 00 00 00 98
               0B F7 00 00 91 05 ED 00 00 E0 04 99 00 00 00 FE
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$8009          AA 01 B0 08 AA AA AA AA 00 00 00 00 00 00 00 00
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$800A          AA 00 00 31 00 00 45 64 9B 29 74 45 46 92 A0 11
               45 46 92 A0 09 45 64 9B 29 76 00 00 00 00 00 00
               45 64 9B 29 74 45 46 92 A0 11 45 46 92 A0 09 45
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$8045       AA 00 BC 00 75 00 9F 32 20 73 00 00 00 00 00 00
            00 00 00 00

$8046       AA 00 C0 00 00 00 00 00 00 00 00 00 00 00 00 00
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$8051       21 10 FF 00 11 10 FF 00 11 90 36 00 11 60 FF 00
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$8052       02 13 00 00 00 00 00 00 00 00 00 00 00 00 00 00

$8053       90 40 A8 00 00 00 00 00 00 00 00 00 00 00 00 00

$8054       AA 00 0A C0 FA 9E 1A 47 00 00 0E B4 FB A8 15 8D
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$F100          00 00 00 00

$F110          0E 37 37 39 36 30 54 33 4C 43 30 32 30 4D 34 00
               00

$F112          0B 43 31 46 32 30 33 37 52 4B 34 35 00 00 00 00
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$F181          37 37 39 35 39 2D 54 33 4C 2D 43 30 33 30 00 00
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APPENDIX B: Vehicle Communication Interface Data Report for 2017 Honda Accord[10]

[10] The VCI data contained in this technical report was provided to SCI by the OEM technician in a PDF report at the time of the vehicle inspection.

All DTC Test Certification

Name_____

Model ACCORD

VIN 1HGCT2B96HAxxxxxx

System	DTC Code	Description
PGM-FI Permanent DTC	P2185	ECT SENSOR 2 CIRCUIT HIGH VOLTAGE
PGM-FI Permanent DTC	P0533	A/C PRESSURE SENSOR VOLTAGE HIGH
PGM-FI Temporary DTC	P2185	ECT SENSOR 2 CIRCUIT HIGH VOLTAGE
PGM-FI Temporary DTC	P0533	A/C PRESSURE SENSOR VOLTAGE HIGH
A/T Permanent DTC	No DTC was found	
A/T Temporary DTC	No DTC was found	
SRS System Permanent DTC	B0070-13	Open or increased resistance in the driver's seat belt tensioner
SRS System Permanent DTC	B0001-13	Open or increased resistance in the driver's airbag first inflator
SRS System Permanent DTC	B0002-12	Short to power in the driver's airbag second inflator
SRS System Permanent DTC	B0002-13	Open or increased resistance in the driver's airbag second inflator
HONDA ABS Permanent DTC	C0063-62	Yaw Rate Sensor Failure (Signal Compare Failure)
EPS Permanent DTC	85-01	(VSA System Malfunction)
EPS Permanent DTC	81-03	Yaw Rate Sensor Malfunction
One-Push Start (PCU) Permanent DTC	No DTC was found	
One-Push Start (BACKUP ECU) Permanent DTC	No DTC was found	
One-Push Start (KEYLESS ACCESS CONTROL Unit) Permanent DTC	No DTC was found	
ACM Permanent DTC	P0A15	FRONT ENGINE MOUNT ACTUATOR CONTROL CIRCUIT LOW CURRENT
GAUGE Permanent DTC	No DTC was found	
Integrated Driver Support System Permanent DTC	C0063-96	Yaw Rate Sensor Diagnose Error
Integrated Driver Support System Permanent DTC	U0416-68	(VSA Brake Actuator Malfunction)
Integrated Driver Support System Permanent DTC	U0420-68	(EPS Control Unit Malfunction)
Integrated Driver Support System Permanent DTC	P2583-87	Lost Communication With The Millimeter Wave Radar
Integrated Driver Support System Permanent DTC	U0416-F8	(VSA Modulator-Control Unit Malfunction)
BODY ELECTRICAL Permanent DTC	B1227	An open in the outside air temperature sensor circuit
BODY ELECTRICAL Permanent DTC	U0199	Power seat control unit lost communication with PW master SW

Date 12/xx/2018

Dealer Number 900000

Service Shop

Service Manager Signature

DataList

IDAS

Filename : Current Data

Date/Time :11/xx/2018 01:20PM

Model : ACCORD Model Year : 2017

VIN :1HGCT2B96HAxxxxxx Odo : 16099

Dealer No. : 900000 1716020022000004

Vehicle speed	0 MPH
Right front wheel speed	0 MPH
Left front wheel speed	0 MPH
Right rear wheel speed	0 MPH
Left rear wheel speed	0 MPH
Yawrate	0 °/s
Yawrate sensor output voltage	2.50 V
Master cylinder pressure	0 MPa
Master cylinder pressure sensor output voltage	0.49 V
Steering angle	15 °
ACCEL PEDAL switch	Release
SET switch	Release
RES switch	Release
GAP switch	Release
MAIN switch	OFF
LKAS switch	Release
LDW switch	Release
Wiper switch	OFF

BRAKE switch (Normally open) ..... Release

BRAKE switch (Normally close) ..... Release

Clutch pedal ..... Release

Camera temperature ..... 46 °C

Battery voltage V

Mileage 1 at the time of detecting unusual temperature ..... NO DATA mile

Mileage 1 while detecting unusual temperature ..... NO DATA mile

IG state 1 when returning from the temperature anomaly .....

	IG ON
Mileage 2 at the time of detecting unusual temperature	NO DATA mile
Mileage 2 while detecting unusual temperature	NO DATA mile
IG state 2 when returning from the temperature anomaly	IG ON
Mileage 3 at the time of detecting unusual temperature	NO DATA mile
Mileage 3 while detecting unusual temperature	NO DATA mile
IG state 3 when returning from the temperature anomaly	IG ON
Mileage 4 at the time of detecting unusual temperature	NO DATA mile
Mileage 4 while detecting unusual temperature	NO DATA mile
IG state 4 when returning from the temperature anomaly	IG ON
Mileage 5 at the time of detecting unusual temperature	NO DATA mile
Mileage 5 while detecting unusual temperature	NO DATA mile
IG state 5 when returning from the temperature anomaly	IG ON
ACC auto cancel history latest number	0
ACC auto cancel history 1	0
ACC auto cancel history 2	0
ACC auto cancel history 3	0
ACC auto cancel history 4	0
ACC auto cancel history 5	0
ACC auto cancel history 6	0
ACC auto cancel history 7	0
ACC auto cancel history 8	0
ACC auto cancel history 9	0
ACC auto cancel history 10	0
CMBS History data 1: Mileage	9068 mile
CMBS History data 2: Mileage	11448 mile
CMBS History data 3: Mileage	12844 mile
CMBS History data 4: Mileage	16036 mile
CMBS History data 5: Mileage	6984 mile

CSA History data 1: Mileage	12826 mile
CSA History data 2: Mileage	13716 mile

DTC

Integrated Driver Support System

Filename	:900000_ACCORD_2017_IDAS_1HGCT2B96HAxxxxxx_11xx2018.dtc		
Date/Time	:11/xx/2018 01:36PM		
Model	: ACCORD	Year	: 2017
VIN	:1HGCT2B96HAxxxxxx	Odo	: 16099
Dealer No.	: 900000		1716020022000004

Confirmed DTCs (Permanent)

C0063-96	Yaw Rate Sensor Diagnose Error
U0416-68	(VSA Brake Actuator Malfunction)
U0420-68	(EPS Control Unit Malfunction)
P2583-87	Lost Communication With The Millimeter Wave Radar
U0416-F8	(VSA Modulator-Control Unit Malfunction)

Freeze Data

IDAS

Filename :900000_ACCORD_2017_IDAS_1HGCT2B96HAxxxxxx_111xx018_133359.dtc

Date/Time :11/xx/2018 01:33PM

Model : ACCORD Year : 2017

VIN :1HGCT2B96HAxxxxxx Odo : 16099

Dealer No. : 900000 1716020022000004

DTC : U3FFF-FF -

Vehicle speed	0 MPH
Right front wheel speed	0 MPH
Left front wheel speed	0 MPH
Right rear wheel speed	0 MPH
Left rear wheel speed	0 MPH
Yawrate	0 °/s
Master cylinder pressure	0 MPa
Battery voltage	10.72 V

DTC

PGM-FI

Filename	:900000_ACCORD_2017_PGM-FI_1HGCT2B96HAxxxxxx_11xx2018.dtc		
Date/Time	:11/xx/2018 01:44PM		
Model	: ACCORD	Year	: 2017
VIN	:1HGCT2B96HAxxxxxx	Odo	: 16099
Dealer No.	: 900000		42160A00F3

Confirmed DTCs (Permanent)

P2185	ECT SENSOR 2 CIRCUIT HIGH VOLTAGE
P0533	A/C PRESSURE SENSOR VOLTAGE HIGH

Pending DTCs (Temporary)

P2185	ECT SENSOR 2 CIRCUIT HIGH VOLTAGE
P0533	A/C PRESSURE SENSOR VOLTAGE HIGH

Freeze Data

PGM-FI

Filename :900000_ACCORD_2017_PGM-FI_1HGCT2B96HAxxxxxx_11xx2018_134406.dtc

Date/Time :11/xx/2018 01:44PM

Model : ACCORD Year : 2017

VIN :1HGCT2B96HAxxxxxx Odo : 16099

Dealer No. : 900000 42160A00F3

DTC : P2185 - ECT SENSOR 2 CIRCUIT HIGH VOLTAGE

Engine Speed	1206 RPM	Vehicle Speed	0 MPH
ECT Sensor 1	59.0 °F	IAT Sensor (1)	91.4 °F
MAP Sensor	1.33 V	MAF Sensor	1.82 V
CLV	47 %	Baro Sensor	4.10 V
TP Sensor	0.88 V	REL TP Sensor	8 %
APP Sensor A	0.96 V	APP Sensor B	0.45 V
APP Sensor	0 %	Target TH VLV	8 °
Idle Target TH	8 °	TP Sensor A	0.90 V
TP Sensor B	1.71 V	AF Sensor B1	0 mA
AF B1 Lambda	1.00	ST Fuel Trim B1	1.00
AF FB AVE(LT Fuel Trim) B1	1.05	AF FB Cmd B1	0.97
AF B1 Lambda Cmd	1.03	FSS B1	OL COND
AF Sensor B2	0 mA	AF B2 Lambda	1.00
ST Fuel Trim B2	1.00	AF FB AVE(LT Fuel Trim) B2	1.02
FSS B2	OL COND	HO2S B1 S2	2.49 V
HO2S B2 S2	2.49 V	AF FB Cmd B2	0.97

AF B2 Lambda Cmd	1.03	Battery	14.1 V
EGR Valve Position Sensor (EGR Vls)	1.22 V	F Injector	5.75 ms
F Injector Active Side	5.76 ms	Spark Advance	-3.5 °
EGR L Command	0.0 mm	VPS Status	6
Rocker Arm Oil Pressure Sensor	40 psi	Fuel Level	76 %
EVAP PC Duty	0 %		

DOT HS 813 093
May 2021

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

15119-051121-v6