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**National Highway
Traffic Safety
Administration**

NHTSA

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October 2018

Special Crash Investigations On-Site Small Overlap/Oblique Impact Investigation Vehicle: 2014 Nissan Versa Location: Missouri Crash Date: August 2016

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

This report and associated case data are based on information available to the Special Crash Investigation team on the date the report was published.

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Technical Report Documentation Page

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16. Abstract This report documents the on-site investigation of a small overlap/oblique impact to a 2014 Nissan Versa. This crash occurred on a straight, two-lane, rural roadway. The Nissan was a 4-door sedan equipped with multi-stage frontal air bags, front seat-mounted side impact air bags, and side impact inflatable curtain (IC) air bags. An unbelted 19-year-old male driver occupied the vehicle. The Nissan was traveling west in the westbound lane. A 1999 Ford Ranger was traveling east in the eastbound lane. The Ford entered the Nissan's travel lane and the front left of the Ford struck the front left of the Nissan (Event 1). The impact resulted in deployment of the Nissan's driver's frontal air bag, both IC air bags, and both front seat-mounted side impact air bags. The Nissan then departed the north side of the roadway, coming to final rest in a ditch heading southwest. The impact caused the Ford to rotate counterclockwise and it rolled over (Event 2), right side leading, seven quarter turns, coming to final rest on the south side of the road on its left plane heading northeast. The unbelted 38-year-old male driver and sole occupant of the Ford was ejected through the left front door during the rollover. The driver of the Nissan sustained fatal injuries and was pronounced deceased at the crash scene. The driver of the Ford sustained police-reported "A" (incapacitating) injuries and was transported by helicopter to a hospital. His injuries and level of treatment are not known. Both vehicles were towed from the crash scene due to damage.			
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Indiana University
Transportation Research Center
On-Site Small Overlap/Oblique Impact Investigation
Case Number - IN16024
Location - Missouri
Vehicle - 2014 Nissan Versa
Crash Date - August 2016

BACKGROUND

This report documents the on-site investigation of the small overlap/oblique impact to a 2014 Nissan Versa (**Figure 1**). This crash investigation was initiated by the National Highway Traffic Safety Administration in September, 2016, after the crash was identified by the Special Crash Investigation team at the Indiana University Transportation Research Center through an online search of Missouri crash report abstracts. This investigation was assigned in September 2016, when permission for the vehicle inspection was obtained from the insurance company. The crash occurred in August 2016 at 1600 hours, in Missouri, and was investigated by a local police agency. The crash involved the Nissan and a 1999 Ford Ranger. The crash scene, Nissan, and Ford were inspected in September 2016.

Figure 1: The damaged 2014 Nissan Versa

This crash occurred on a straight, two-lane rural roadway. The Nissan was a 4-door sedan equipped with multi-stage frontal air bags, front seat-mounted side impact air bags, and side impact inflatable curtain (IC) air bags. An unbelted 19-year-old male driver occupied the vehicle. The Nissan was traveling west in the westbound lane. The Ford was traveling east in the eastbound lane. The Ford entered the Nissan's travel lane and the front left of the Ford struck the front left of the Nissan (Event 1). The impact resulted in deployment of the Nissan's driver's frontal air bag, both IC air bags, and both front seat-mounted side impact air bags. The Nissan then departed the north side of the roadway coming to final rest in a ditch heading southwest. The impact caused the Ford to rotate counterclockwise and it rolled over (Event 2), right side leading, seven quarter turns coming to final rest on the south side of the road on its left plane heading northeast. The unbelted 38-year-old male driver and sole occupant of the Ford was ejected through the left front door during the rollover. The driver of the Nissan sustained fatal injuries and was pronounced deceased at the crash scene. The driver of the Ford sustained police-reported "A" (incapacitating) injuries and was transported by helicopter to a hospital. His injuries and level of treatment are not known. Both vehicles were towed from the crash scene due to damage.

CRASH SUMMARY

Crash Site:

This crash occurred during the day time on a straight, two-lane rural roadway. The weather conditions were clear with 16 kilometers (10 miles) visibility, south-southwest winds at 6 km/h (4 mph), a temperature of 32.8 °C (91 °F), and a dew point of 23.9 °C (75 °F), according to local weather reports. The roadway had one lane in each direction and was bordered on each side by a narrow bituminous shoulder and a ditch.

The roadway surface was dry bituminous. The speed limit for each vehicle was 89 km/h (55 mph). The crash diagram is included at the end of this report on page 9.

Figure 2: Westbound approach of the Nissan

Pre-Crash

The Nissan was traveling west in a westbound lane (**Figure 2**) at an EDR- reported speed of 115 km/h (71 mph) at -5.0 sec prior to algorithm enable (AE). The Ford was traveling east in the eastbound lane and crossed the centerline into the westbound lane. The Nissan's EDR reported a 24-degree right steer at -0.5 sec indicating that the Nissan's driver initiated a right steering maneuver in an attempt to avoid the crash. The vehicle's speed at -0.5 sec was reported as 117 km/h (73 mph). The service brake was reported as "On" at 0.0 sec at which point the vehicle's speed was 112 km/h (70 mph).

Crash

The front left of the Ford (**Figure 3**) struck the front left of the Nissan (**Figure 4**). The impact occurred 1.0 m (3.2 ft) into the Nissan's travel lane. The force direction on the Nissan was in the 12 o'clock sector and the impact resulted in a stage 2 deployment of the driver's frontal air bag. Both front seat-mounted side impact and IC air bags also deployed and both front seat belt pretensioners actuated. The EDR reported the maximum longitudinal and lateral velocity changes to the Nissan as -60 km/h (-37 mph) and 16 km/h (10 mph), respectively.

The Damage algorithm of the WinSMASH program calculated the Nissan's total delta-V as 91 km/h (57 mph). The longitudinal and lateral velocity changes were -90 km/h (-56 mph) and 16 km/h (10 mph), respectively. WinSMASH calculated the total delta-V for

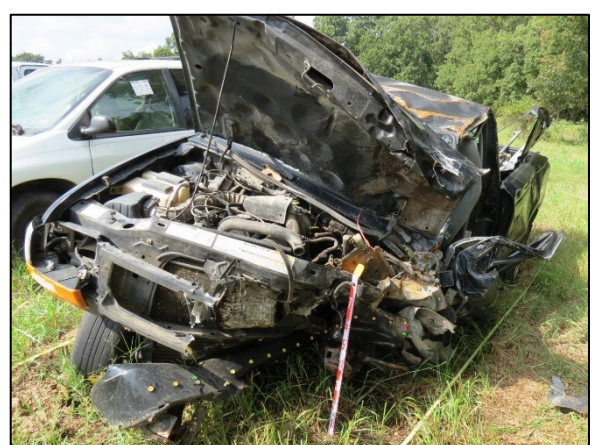


Figure 3: Damage to the front plane of the Ford

the Ford as 76 km/h (47 mph). The longitudinal and lateral velocity changes were -76 km/h (-47 mph) and 0 km/h, respectively. The WinSMASH results were considered borderline and high.

Figure 4: Damage to the front plane of the Nissan

The impact caused the Ford to rotate counterclockwise an estimated 50 degrees as it traveled approximately 7 m (23 ft) in a southeast direction where it rolled over, right side leading, in the eastbound lane. The driver was ejected from the vehicle through the left front door during the rollover. The vehicle rolled over a total of seven quarter turns across a distance of approximately 25 m (83 ft), coming to final rest on its left plane in a ditch heading northeast. The Nissan departed the north side of the road following the impact with the Ford coming to final rest in a ditch heading southwest.

Post-Crash

The police were notified of the crash at 1619 hours and arrived on scene at 1640 hours. The driver of the Nissan sustained fatal injuries and was pronounced deceased at the crash scene 14 minutes following the crash, according to the police crash report. He was removed from the vehicle by emergency responders and transported to a local funeral home. The driver of the Ford sustained police-reported "A" (incapacitating) injuries and was transported by helicopter to a hospital. His injuries and level of treatment are not known. Both vehicles were towed from the crash scene due to damage.

2014 NISSAN VERSA

Description

The Nissan was a front-wheel drive, 5-occupant, 4-door sedan with the VIN 3N1CN7AP8ELxxxxxx, manufactured in April 2013. The vehicle was equipped with a 1.6-liter, I-4 engine, 2-speed electronic continuously variable transmission, 4-wheel anti- lock brakes with electronic brake force distribution, brake assist, traction control, and electronic stability control. The vehicle was also equipped with multi-stage frontal air bags, front seat-mounted side impact air bags, and side impact IC air bags that were not certified compliant to Federal Motor Vehicle Safety Standard No. 226, "Ejection Mitigation." The vehicle was equipped with a tilt steering column. The steering column was displaced from the instrument panel and the tilt adjustment could not be determined at the SCI vehicle inspection. The specified wheelbase was 260 cm (102.4 in).

The vehicle manufacturer's recommended tire size was P185/65R15. The vehicle was equipped with Douglas Extra Trac II tires on the left front wheel, Aplus A606 tires on the

left rear, and Douglas All Season tires on the right rear and right front tires. The tires were of the recommended size. The vehicle manufacturer's recommended cold tire pressure for the front and rear tires was 248 kPa (36 psi). The tires were all in good condition prior to the crash.

The front row was equipped with driver and passenger cloth-covered bucket seats with adjustable head restraints. The second row was equipped with a cloth-covered bench seat with folding backs and adjustable head restraints. The driver's seat track was adjusted to the full rear position and the seat back was reclined 18 degrees aft of vertical. The remaining seats were unoccupied at the time of the crash.

Exterior Damage

The entire front plane sustained direct and induced damage during the impact with the front plane of the Ford. The direct damage also extended down the left plane involving the fender, front wheel, A-pillar, roof, and left front door, which was displaced from the vehicle. The direct damage on the front plane began at the left corner of the front bumper and extended 50 cm (19.7 in) across the front plane. The Field L was 109 cm (42.9 in) long and began at the same location. Crush measurements were taken on the bumper bar and the maximum residual crush was 51 cm (20.1 in) occurring at C_1 (**Figure 5**). The crush values were: C_1 = 51 cm (20.1 in), C_2 = 47 cm (18.5 in), C_3 = 39 cm (15.4 in), C_4 = 26 cm (10.2 in), C_5 = 10 cm (3.9 in), C_6 = 0 cm.

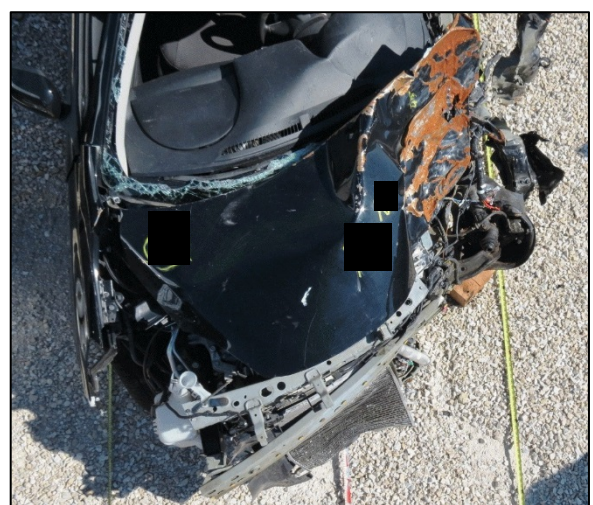


Figure 5: Top view of crush to the front plane of the Nissan

Damage Classification: The Collision Deformation Classification (CDC) was 12FYEW3 (350 degrees).

Event Data Recorder

The Nissan's EDR was imaged with version 17.0 of the Bosch Crash Data Retrieval software and reported with version 17.6.1. The EDR was imaged via direct connection to the air bag control module (ACM). The EDR report is attached to the end of this report as **Appendix**.

The EDR reported a deployment event and a "Complete" file was recorded. The driver's seat belt status was reported as "Off (Unfastened)." The frontal air bag warning lamp was reported as "Off" and no diagnostic trouble codes were reported. The ignition cycles at the crash and when the data were imaged were reported as 4,897 and 4,901, respectively.

Deployment Command Data: Both stages of the driver's frontal air bag were commanded to deploy. The "Time to Deploy" for stage one and two was 10 and 13 msec, respectively. The "Time to Deploy" for both front seat-mounted side impact air bags was 32 msec, and 46

msec for both IC air bags. Both front seat belt pretensioners were also commanded to deploy and the "Time to Fire" for each one was 10 msec. The maximum longitudinal and lateral delta-Vs reported on the "System Status at Event" record were -60 km/h (-37 mph) and 16 km/h (10 mph), respectively. The maximum longitudinal and lateral accelerations were reported as -60 and 60 g, respectively. Both values were reported as "clp," which indicated that the value exceeded the design range of the sensor, according to the EDR data limitations.

Interior Damage

The interior of the Nissan sustained major damage from 13 intrusions. The most severe intrusions into the driver's seating area involved the left instrument panel and windshield header, which intruded longitudinally 34 cm (13.4 in) and vertically 25 cm (9.8 in), respectively. The steering assembly was displaced from its instrument panel anchors and was found on the driver's seat at the SCI vehicle inspection. It was estimated to have intruded longitudinally 25 cm (9.8 in). The upper left A-pillar was separated from the cowl and roof (**Figure 6**).

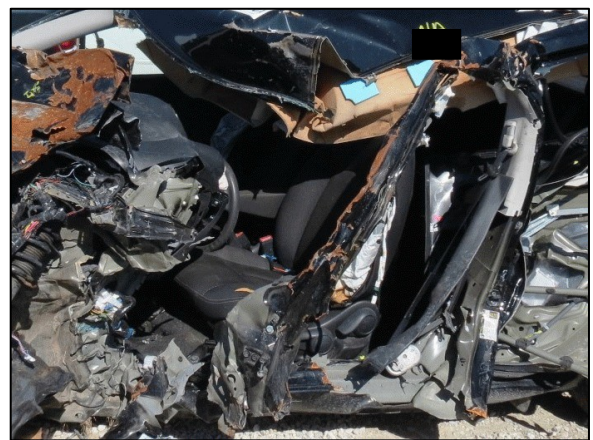


Figure 6: Damage to the Nissan's left A-pillar, roof, and left front door frame

The impact also resulted in severe deformation of the left front door, which was displaced from the vehicle.

The lower left instrument panel was scuffed from probable contact by the driver's left knee. The windshield glazing had been cut and removed, probably by emergency responders. The left front, left rear, second left rear, and backlight glazing were disintegrated. The right rear glazing was disintegrated but the lack of structural damage in that area suggested it was probably fractured by emergency responders. The remaining glazing was undamaged. The left rear door was jammed shut. The right front and right rear doors remained closed and operational.

Manual Restraint Systems

The front and second rows were equipped with three-point lap and shoulder seat belts with sliding latch plates. The front row seat belts were equipped with adjustable upper anchors and retractor-mounted seat belt pretensioners. The driver's upper anchor was adjusted to the full-up position and the pretensioner actuated during the crash. The remaining seating positions were unoccupied at the time of the crash.

The driver was not restrained by the lap and shoulder seat belt as indicated by the status of the seat belt, which had been drawn tightly into the retractor by pretensioner actuation. The vehicle's EDR also reported the driver's seat belt status as "Off (Unfastened)."

Supplemental Restraint Systems

The Nissan was equipped with multi-stage frontal air bags, front seat-mounted side impact air bags, and side impact IC air bags that were not certified compliant to FMVSS No. 226, "Ejection Mitigation." The driver's frontal air bag, both front seat-mounted side impact air bags, and both IC air bags deployed during the crash.

The driver's frontal air bag was located in the steering wheel hub. The module cover had three flaps constructed of pliable vinyl. The top flap was 14 cm (5.5 in) wide and 6 cm (2.4 in) high. The bottom left flap was 11 cm (4.3 in) wide and 10 cm (3.9 in) high. The bottom right flap was 7 cm (2.8 in) wide and 7 cm (2.8 in) high. The cover flaps opened at the designated tear seams and were undamaged. The deflated air bag was 60 cm (23.6 in) in diameter. Inspection of the air bag revealed no discernable occupant contact scuff marks. There was a 36 cm (14.2 in) high and 35 cm (13.8 in) wide tear in the material on the back of the air bag. The tear was ragged with long tailings in the nylon along the tear suggesting that loading by the unbelted driver may have ruptured the air bag. A 6 cm (2.4 in) long cut was present on the front of the air bag.

The IC air bags were located along the roof side rail inside the headliner and extended from the A-pillar to the C-pillar. Each deflated IC was approximately 160 cm (63.0 in) long and 43 cm (16.9 in) high and extended 12 cm (4.7 in) below the beltline. Based on the measurement of the right IC, there was a triangular-shaped gap between the front of the IC and the A-pillar that was 46 cm (18.1 in) wide at the beltline and 28 cm (11.0 in) high. There was no discernable evidence of occupant contact to the left IC. The left IC sustained cuts and abrasions on its inboard surface located 33 cm (13.0 in) rear of the front of the IC. There were also tears and abrasions in the approximate same area on the outboard surface of the IC. This damage probably resulted as the left front door was crushed and displaced from the vehicle during the crash.

The front seat-mounted side impact air bags were located in the outboard side of the seat back and deployed through a tear seam. The driver's deflated seat-mounted side impact air bag was 40 cm (15.7 in) high and 30 cm (11.8 in) wide. There was a large blood stain on the inboard lower portion of the air bag but no discernable occupant contact scuff marks. The air

bag sustained no damage during the crash. The deflated front right seat-mounted side impact air bag was 55 cm (21.7 in) high and 23 cm (9.1 in) wide. It sustained no damage during the crash.

2014 NISSAN VERSA OCCUPANT

Driver Demographics

Age/Sex:	19 years/male
Height:	Unknown
Weight:	Unknown
Eyewear:	Unknown
Seat Type:	Bucket
Seat Track Position:	Rear-most
Manual Restraint Usage:	None
Usage Source:	Vehicle inspection, EDR
Air Bags:	Driver's frontal, front seat-mounted side impact, and both ICs deployed
Alcohol/Drug Involvement:	None
Egress From Vehicle:	Removed by emergency responders
Transport From Scene:	Taken to local funeral home
Medical Treatment:	Pronounced deceased at crash scene

Driver Injuries

Injury No.	Injury	AIS 2015	Involved Physical Components (IPC)	IPC Confidence Level
1	Trauma, multi-system, not further specified	099999.9	Unknown IPC	Unknown

Source: Coroner records.

Driver Kinematics

The driver was unbelted and his seat track was adjusted to the rear-most position. The front plane impact to the Nissan resulted in a stage two deployment of the driver's frontal air bag, seat-mounted side impact, and left IC air bags. The front right seat-mounted side impact and right IC air bags also deployed, and both front seat belt pretensioners actuated. The driver was displaced forward and slightly to the left and his face and chest loaded the deployed frontal air bag and his knees contacted the lower instrument panel. It is likely that the driver's head contacted the left A-pillar as it was crushed rearward during the crash prior to being detached from the cowl. The driver's left flank also probably contacted the left front door. The driver sustained fatal injuries and was pronounced deceased at the crash scene 14 minutes following the crash. He was removed from the vehicle by emergency responders and transported to a local funeral home.

1999 FORD RANGER

Description

The Ford was a rear-wheel-drive, 2-occupant, 2-door, regular cab pickup truck with the VIN 1FTYR10C5XUxxxxxx, equipped with a 2.5-liter, I-4 engine and a 5-speed manual transmission. The vehicle was also equipped with redesigned frontal air bags.

Exterior Damage

The Ford sustained direct and induced damage to the front and left planes from the impact with the front plane of the Nissan. The front bumper, hood, left turn lamp/head lamp assembly, left fender, and left front wheel were directly damaged. The direct damage began at the left corner of the front bumper and extended 108 cm (42.5 in) across the front plane. The Field L was 63 cm (24.8 in) long and began at the same location. Crush measurements were taken on the bumper and the maximum residual crush was 134 cm (53.0 in) occurring at C_2. The crush values were: C_1 = 126 cm (46.6 in), C_2 = 134 cm (52.7 in), C_3 = 134 cm (52.8 in), C_4 = 129 cm (50.8 in), C_5 = 77 cm (30.3 in), C_6 = 16 cm (6.3 in).

Damage Classification Event 1: The CDC was 12FDEW6 (0 degrees).

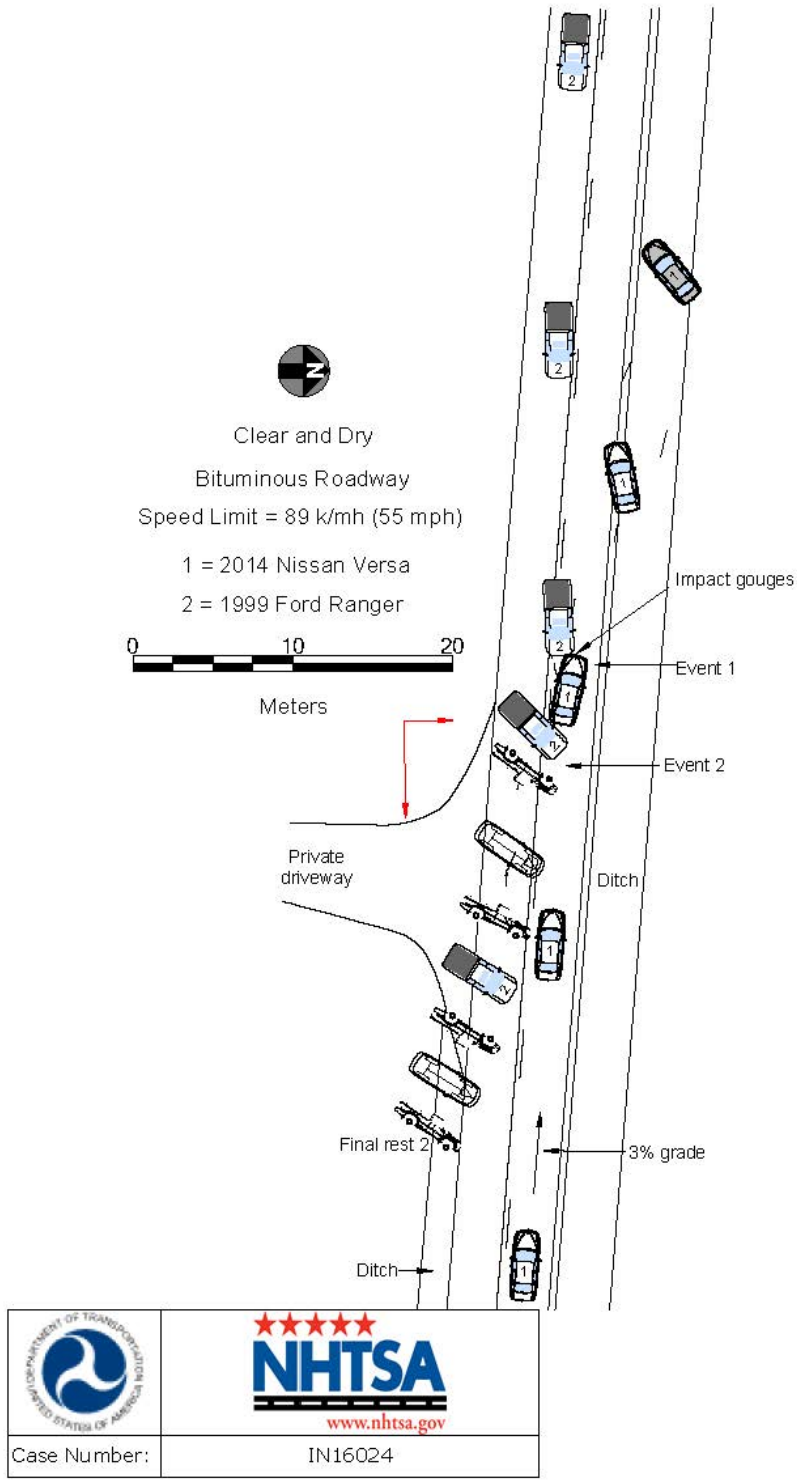
Exterior Damage Event 2: The Ford sustained direct and induced damage to both side planes and the top plane during the rollover. The direct damage on the right plane involved the top of the door, roof side rail, B-pillar, and rear portion of the truck bed. The direct damage on the left plane involved the left front door, roof side rail, B-pillar, and side of the truck bed. The direct damage on the top plane involved the full width of the roof, 122 cm (48.0 in). The hood and top of the left rear corner of the truck bed were also directly damaged. The maximum vertical crush was approximately 17 cm (7 in) occurring on the roof. There was no lateral crush to the roof structure.

Damage Classification Event 2: The CDC was 00TDDO3. The severity of the damage was moderate.

Occupant Data

The driver (38-year-old male) was not restrained by a lap and shoulder seat belt according to the police crash report and was ejected from the vehicle during the crash through the left front door. He sustained police-reported “A” (incapacitating) injuries and was transported by ambulance to a hospital. His injuries and level of treatment are not known.

CRASH DIAGRAM



APPENDIX A:
2014 Nissan Versa Event Data Recorder Report[1]

[1] 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 Viewer 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	3N1CN7AP8EL******
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	IN16024_V1_ACM.CDRX
Saved on	
Imaged with CDR version	Crash Data Retrieval Tool 17.0
Imaged with Software Licensed to (Company Name)	U.S. DOT / NHTSA
Reported with CDR version	Crash Data Retrieval Tool 17.6.1
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
Event(s) recovered	Event Record 1

Comments

No comments entered.

Data Limitations

General Information:

Data limitations are intended to assist in reading event data that has been imaged from the vehicle's Air bag Control Unit (ACU). Event data should be considered in conjunction with other available physical evidence from the vehicle and scene.

Airbag Control Unit (ACU)

- The Air bag Control Unit (ACU) can store two types of events: Non-Deployment Events and Deployment.
  - A Non-Deployment Event is a crash or other physical occurrence which causes the ACU algorithm to be activated, but in which deployment thresholds are not reached.
  - A Deployment Event is a crash or other physical occurrence which causes ACU deployment thresholds to be reached or exceeded. Depending on the vehicle model, one or more of the following may be activated during a Deployment Event: front air bags, seat-mounted side airbags, roof-mounted or door-mounted curtain air bags, pretensioners, or pop-up roll bars.

- The ACU can record up to two events. If additional events occur subsequently, the older of the two events already recorded (i.e. the one which occurred first) is overwritten.
  - A Non-Deployment Event can be overwritten by another Non-Deployment event, or by a Deployment Event.
  - A Deployment Event has higher priority than a Non-Deployment Event, and cannot be interrupted or overwritten by another event.
  - The data pertaining to a Deployment Event is locked after being recorded. However, a second event can still be recorded subsequently in the portion of the event memory which is not locked.

- Event data includes both pre-crash data and crash data.
  - If the power supply to the ACU is lost during an event, all or part of the event data may not be recorded.
  - In addition to the recording of event data, the ACU has the ability to perform diagnostics and record Diagnostic Trouble Codes (DTCs).

Data Element Sign Convention:

The following table provides an explanation of the sign convention for data elements in the CDR report.

Data Element Name	Positive Sign Notation Indicates
Longitudinal Acceleration	Forward
Delta-V, Longitudinal	Forward
Maximum Delta-V, Longitudinal	Forward
Lateral Acceleration	Left to Right
Delta-V, Lateral	Left to Right
Maximum Delta-V, Lateral	Left to Right
Vehicle Roll Angle	Left to Right Rotation
Steering Input	Left Turn

- "Life Time Counter (sec)" indicates the elapsed time, in seconds, from the vehicle's first ignition activation until the start of the first recorded event. The counter is incremented whenever the vehicle's ignition is on. The counter is reset to 0 if the ACU is replaced.
- "Complete File Recorded" indicates whether a complete EDR data set has been stored after the event. "Yes" indicates that a complete data set has been recorded. "No" indicates that only a portion of the data set has been recorded, for example due to the power to the ACU being lost during the event.
- "Multi-Event, Number of Events (1, 2)" indicates the number of events which are stored during a given ignition cycle. A Multi-Event occurs whenever the time between Event 2 trigger threshold and Event 1 trigger threshold is less than or equal to 5 seconds during the same ignition cycle, and "2" will be recorded in this case. Otherwise, "1" will be recorded.
- "Air Bag Warning Lamp (On, Off)" indicates whether the ACU was in trouble mode or in normal operation mode at the time of the event. "On" indicates that the air bag warning lamp was illuminated at the time of the event, and the ACU was in trouble mode. "Off" indicates that the air bag warning lamp was not illuminated at the time of the event, and the ACU was in normal operation mode.
- "Frontal Air Bag Suppression Switch Status" indicates whether front passenger air bag deployment was suppressed at the time of the event. "On" indicates that the front passenger air bag was suppressed at the time of the event (deployment inhibited). "Off" indicates that the front passenger air bag was not suppressed at the time of the event (deployment enabled).
- "Delta-V, Longitudinal" indicates the cumulative change in velocity along the longitudinal direction.
- "Acceleration, Longitudinal" indicates the rate of change of velocity with time along the longitudinal direction.
- "Delta-V, Lateral" indicates the cumulative change in velocity along the lateral direction.
- "Acceleration, Lateral" indicates the rate of change of velocity with time along the lateral direction.
- "Engine Throttle, % full" indicates the position of the accelerator pedal as a percentage of the fully depressed position.
- "Service Brake (On, Off)" indicates whether the service brake is activated ("On") or not activated ("Off").
- "Steering Input (deg)" indicates the angular displacement of the steering wheel measured in degrees. -250 deg indicates a 250 degree turn to the right of the steering wheel, 0 deg indicates the straight-ahead steering wheel position, and 250 deg indicates a 250 degree turn to the left of the steering wheel.
- The notation "CLP" indicates that the measurement captured by a sensor exceeded the design range of the sensor.
- "Seat Track Position Switch, Foremost, Status, Driver (Yes/No)" indicates whether the driver's seat is positioned within a designated threshold value of the most forward adjustment position. "Yes" indicates that the driver's seat is positioned within a designated threshold value of the most forward adjustment position. For all other adjustment positions, "No" is displayed. This data will not be available if the seat track position switch is not installed in the vehicle.
- "Occupant Size Classification, Right Front Passenger, Child (Yes/No)" indicates whether or not the right front passenger is classified as a child (as defined in 49 CFR part 572, subpart N or smaller). This data will not be available for all vehicles.
- "e-pedal ON/OFF Status" indicates whether "e-pedal" is activated (ON), or not activated (OFF). This data will not be available for all vehicles.

Hexadecimal Data:
All data that has been specified for retrieval is shown in the Hexadecimal Data section of this report. However, the Hexadecimal Data section may contain data that is not translated by the CDR tool.

Data Sources:
- Crash data is measured internally in the ACU.
- Pre-crash data is not measured internally in the ACU, but is transmitted from other control units through the Controller Area Network (CAN).
- Pre-crash data and crash data are asynchronous.

0701_Nissan001_r006

DTCs at Time of Retrieval

DTC	Status	Description
B1209	Current	FRONTAL COLLISION DETECTION
B1210	Current	SIDE COLLISION DETECTION
B1035	Current	CRASH ZONE SEN [COMM FAIL]
B1345	Current	FR-LH DOOR SATEL SENS [COMM MALFUNCTION]
B1120	Current	SATELLITE SENS LH [COMM FAIL]
B1023	Current	PASS A/B INDCTR CKT
B1115	Current	SATELLITE SENS RH [COMM FAIL]
B1338	Current	FR-RH DOOR SATEL SENS [COMM MALFUNCTION]
B1049	Current	DRIVER AIRBAG MODULE [OPEN]
B1054	Current	DRIVER AIRBAG MODULE [OPEN]
B1065	Current	ASSIST A/B MODULE [OPEN]
B1070	Current	ASSIST A/B MODULE [OPEN]
B1081	Current	PRE-TEN FRONT RH [OPEN]
B1086	Current	PRE-TEN FRONT LH [OPEN]
B1129	Current	SIDE MODULE RH [OPEN]
B1134	Current	SIDE MODULE LH [OPEN]

System Status at Event (Event Record 1)

Life Time Counter (sec)	4792451
Complete File Recorded (Yes/No)	Yes (Complete)
Ignition Cycle, Crash	4897
Ignition Cycle, Download	4901
Multi-Event, Number of Events (1, 2)	1
Time from Event 1 to 2 (sec)	N/A
Safety Belt Status, Driver	Off (Unfastened)
Safety Belt Status, Right Front Passenger	Off (Unfastened)
Frontal Air Bag Warning Lamp (On, Off)	Off
Frontal Air Bag Suppression Switch Status	On (AS airbag inhibit)
Maximum Delta-V, Longitudinal (MPH [km/h])	-37 [-60]
Time, Maximum Delta-V, Longitudinal (msec)	300
Maximum Delta-V, Lateral (MPH [km/h])	10 [16]
Time, Maximum Delta-V, Lateral (msec)	45
Maximum Acceleration, Longitudinal (g)	-60 (clp)
Time, Maximum Acceleration, Longitudinal (msec)	12.5
Maximum Acceleration, Lateral (g)	60 (clp)
Time, Maximum Acceleration, Lateral (msec)	30

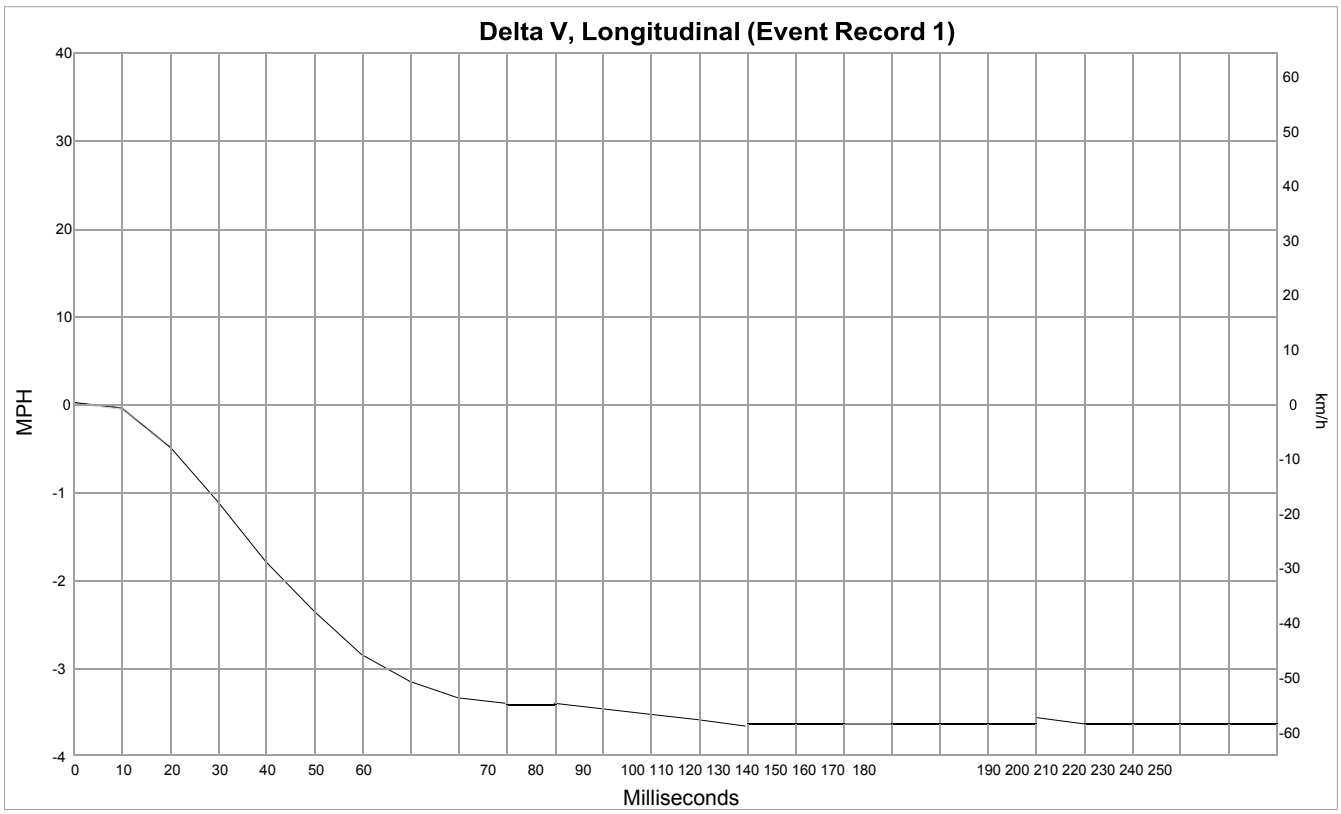
Deployment Command Data (Event Record 1)

Frontal Air Bag Deployment, Time to Deploy/First Stage, Driver (msec)	10
Frontal Air Bag Deployment, Time to Deploy/First Stage, Passenger (msec)	N/A
Frontal Air Bag Deployment, Time to 2nd Stage, Driver (msec)	13
Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (msec)	N/A
Side Air Bag Deployment, Time to Deploy, Driver (msec)	32
Side Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	46
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Driver Side (msec)	32
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Right Side (msec)	46
Pretensioner Deployment, Time to Fire, Driver (msec)	10
Pretensioner Deployment, Time to Fire, Right Front Passenger (msec)	10

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

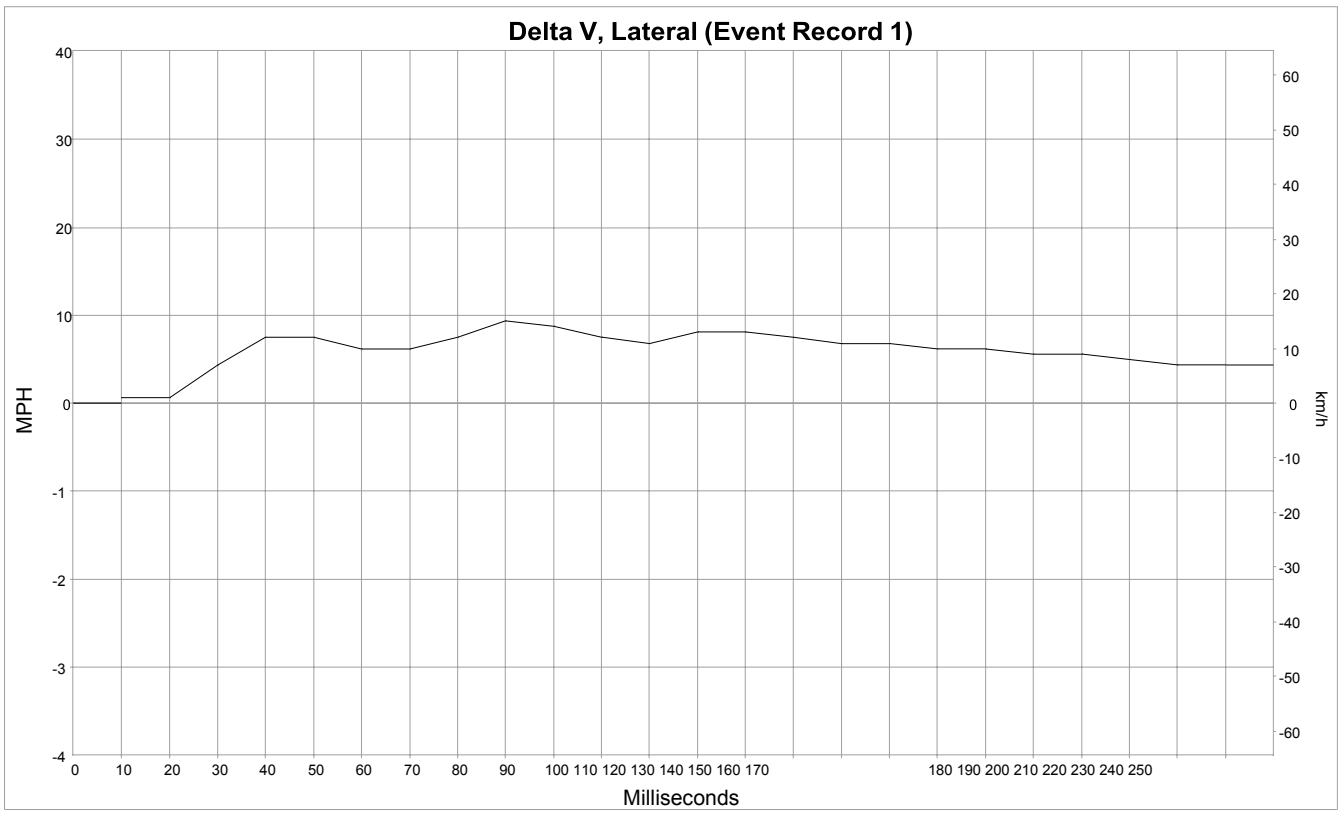
(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % full	Engine RPM	Motor RPM	Service Brake (On, Off)	Steering Input (deg)
-5.0	71 [115]	27	4100	4100	Off (Brake Not Activated)	2
-4.5	72 [116]	27	4100	4100	Off (Brake Not Activated)	2
-4.0	73 [117]	27	4150	4150	Off (Brake Not Activated)	2
-3.5	73 [118]	25.5	4200	4200	Off (Brake Not Activated)	6
-3.0	73 [118]	25.5	4100	4100	Off (Brake Not Activated)	4
-2.5	74 [119]	24	4000	4000	Off (Brake Not Activated)	0
-2.0	74 [119]	17	3850	3800	Off (Brake Not Activated)	0
-1.5	73 [118]	0	3200	3200	Off (Brake Not Activated)	2
-1.0	73 [117]	0	2500	2450	Off (Brake Not Activated)	2
-0.5	73 [117]	0	2300	2300	Off (Brake Not Activated)	-24
0.0	70 [112]	0	2250	2200	On (Brake Activated)	-18



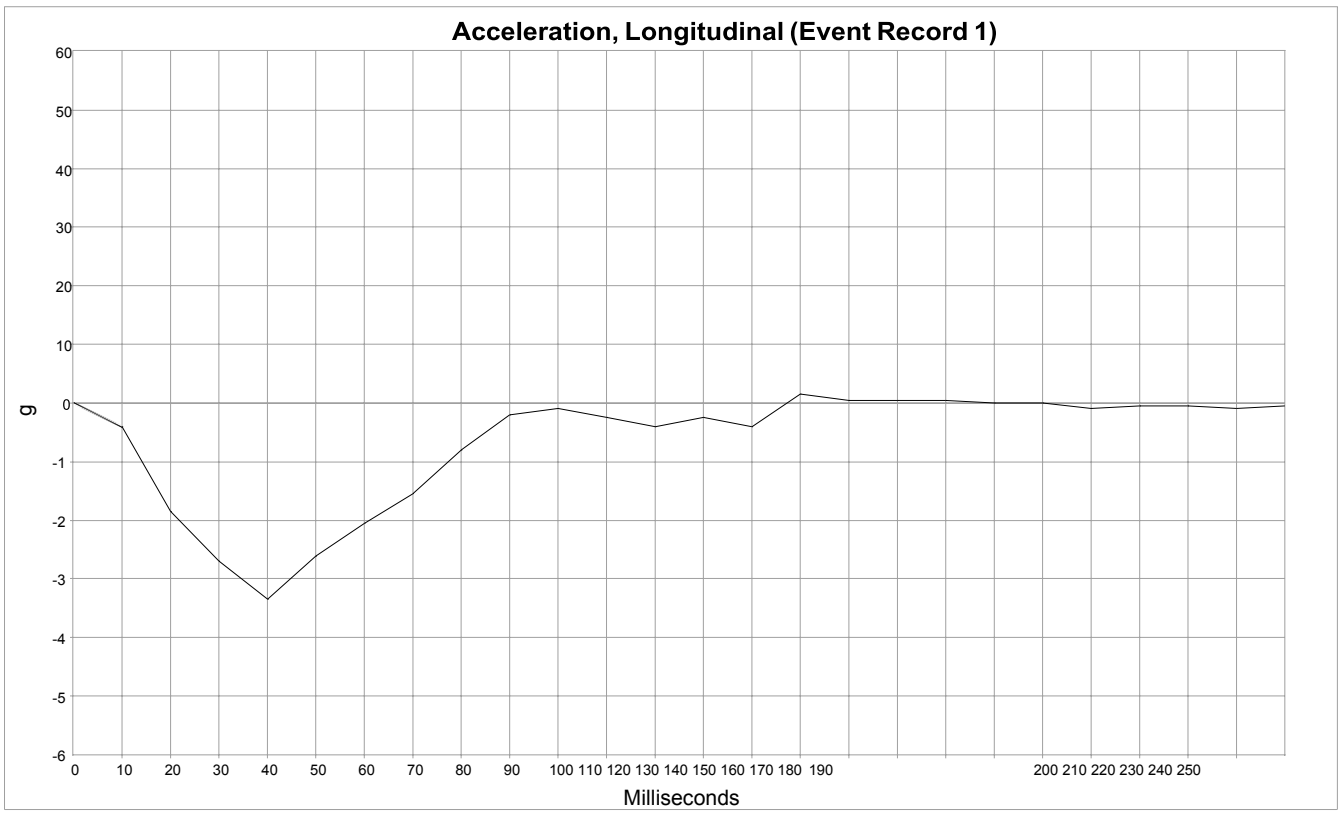
Longitudinal Delta V (Event Record 1)

Time (msec)	MPH [km/h]
0	0 [0]
10	-1 [-1]
20	-5 [-8]
30	-11 [-18]
40	-18 [-29]
50	-24 [-38]
60	-29 [-46]
70	-32 [-51]
80	-34 [-54]
90	-34 [-55]
100	-34 [-55]
110	-35 [-56]
120	-35 [-57]
130	-36 [-58]
140	-37 [-59]
150	-37 [-59]
160	-37 [-59]
170	-36 [-58]
180	-36 [-58]
190	-36 [-58]
200	-36 [-58]
210	-37 [-59]
220	-37 [-59]
230	-37 [-59]
240	-37 [-59]
250	-37 [-59]



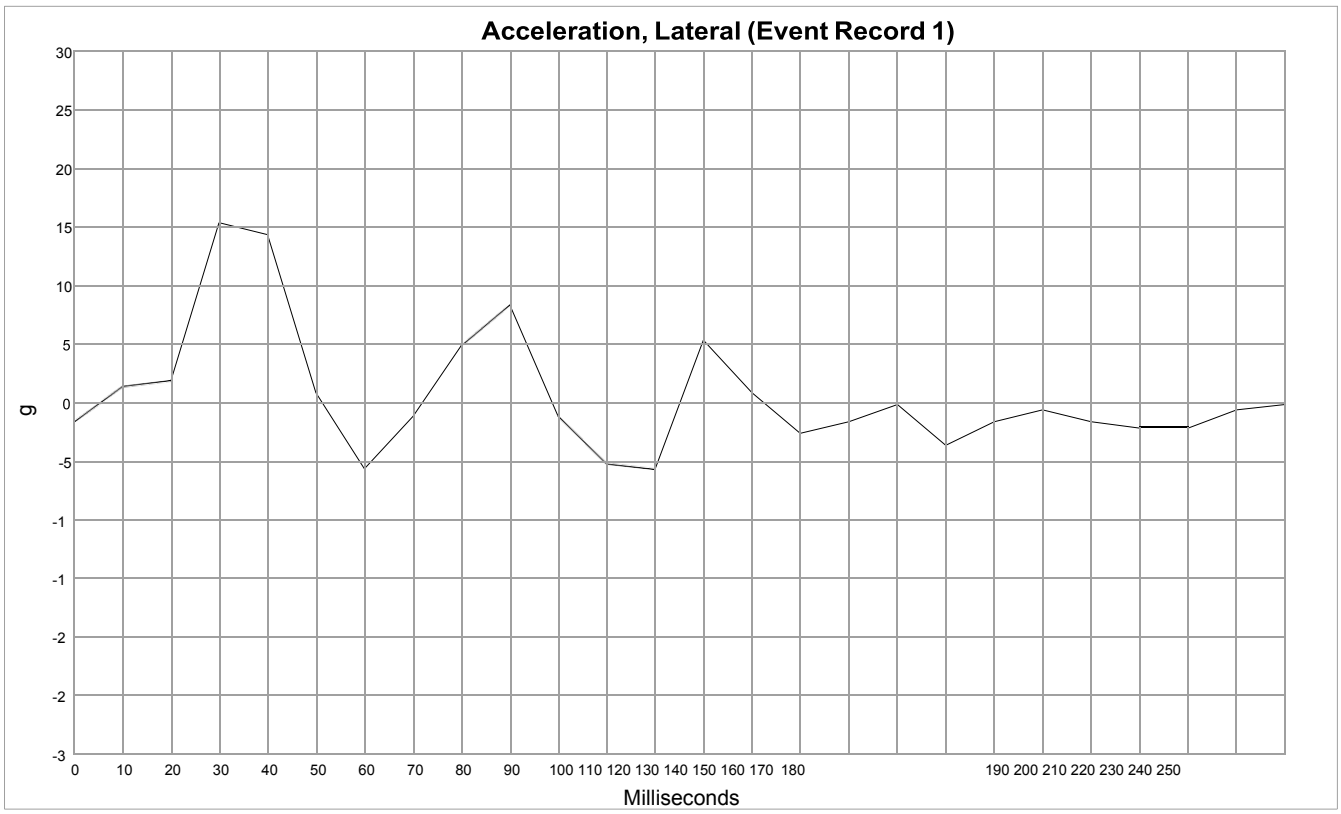
Lateral Delta V (Event Record 1)

Time (msec)	MPH [km/h]
0	0 [0]
10	1 [1]
20	1 [1]
30	4 [7]
40	7 [12]
50	7 [12]
60	6 [10]
70	6 [10]
80	7 [12]
90	9 [15]
100	9 [14]
110	7 [12]
120	7 [11]
130	8 [13]
140	8 [13]
150	7 [12]
160	7 [11]
170	7 [11]
180	6 [10]
190	6 [10]
200	6 [9]
210	6 [9]
220	5 [8]
230	4 [7]
240	4 [7]
250	4 [7]



Longitudinal Acceleration (Event Record 1)

Time (msec)	g
0	0
10	-4
20	-18.5
30	-27
40	-33.5
50	-26
60	-20.5
70	-15.5
80	-8
90	-2
100	-1
110	-2.5
120	-4
130	-2.5
140	-4
150	1.5
160	.5
170	.5
180	.5
190	0
200	0
210	-1
220	-.5
230	-.5
240	-1
250	-.5



Lateral Acceleration (Event Record 1)

Time (msec)	g
0	-1.5
10	1.5
20	2
30	15.5
40	14.5
50	1
60	-5.5
70	-1
80	5
90	8.5
100	-1
110	-5
120	-5.5
130	5.5
140	1
150	-2.5
160	-1.5
170	0
180	-3.5
190	-1.5
200	-.5
210	-1.5
220	-2
230	-2
240	-.5
250	0

Hexadecimal Data

```
61 03 00 00 01 0A 0A 0A 0D FF FF 00 2F 3E 04 FF FF 20 20 04 FF FF 01 55 55 55 80 00 8C 80 55
00 FF FF FF FF FF FF FF FF FF FF FF FF FF 0A 0A 0A 0A 0A 0A 0A 0A 0A 0A FF FF FF FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0A FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF 3F FF FF FF FF FF FF 2F 1C 03 05 FF 05 FF FF 0C 05 FF FF 05 21 FF FF 11 01 05 FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF

61 04 FF 41 00 00 00 00

61 06 FF C0 00 D1 00 D2 00 23 01 59 00 78 00 17 00 73 01 52 00 31 00 36 00 41 00 46 00 51 00
56 00 81 00 86 FF

61 07 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
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73 00 74 00 75 00 76 00 76 00 77 00 77 00 76 00 75 00 75 00 70 00 36 00 36 00 36 00 33 00 33
00 30 00 22 00 00 00 00 00 00 00 00 01 01 01 01 01 01 01 01 01 00 13 21 13 25 01 01 0A 00
01 FF 00 01 00 0D 00 20 2E 20 2E 0A 0A FD 03 04 1F 1D 02 F5 FE 0A 11 FE F6 F5 0B 02 FB FD 00
F9 FD FF FD FC FC FF 00

61 1B 00 F8 DB CA BD CC D7 E1 F0 FC FE FB F8 FB F8 03 01 01 01 00 00 FE FF FF FE FF 00 01 01
07 0C 0C 0A 0A 0C 0F 0E 0C 0B 0D 0D 0C 0B 0B 0A 0A 09 09 08 07 07 07 10 12 00 52 00 52 00 53
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7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F 7F
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00 53 00 54 00 52 00 50 00 4C 00 40 00 31 00 2E 00 2C FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF FF FF FF FF FF 00 49 20 83

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0x0400191C FF FF

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0x040018B8 FF FF FF FF

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59 02 09

59 0F 09

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October 2018

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

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