On-Site Rollover Investigation
Dynamic Science, Inc. (DSI), Case Number DS09005
2008 Ford Focus
Arizona
December 2008

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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 in order 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.

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16. Abstract

This on-site investigation focused on a 2008 Ford Focus that was involved in a rollover crash. The Ford was traveling eastbound on a divided interstate highway and was being driven by a 40-year-old male. The driver lost control of the vehicle and departed the roadway on the right side. The vehicle initiated a right side leading rollover that included 8 quarter-turns. During the crash, the vehicle's seat-mounted side air bags and side impact inflatable curtain air bags deployed. The driver was completely ejected from the vehicle through the left front window. The driver sustained blunt force trauma injuries to his head and chest, and was pronounced deceased at the scene. The Ford was towed from the scene due to damage and was later declared a total loss by the insurance company.

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Crash Investigation
Case Number: DS09005

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BACKGROUND

This on-site investigation focused on a 2008 Ford Focus that was involved in a rollover crash (**Figure 1**). The Ford was traveling eastbound on a divided interstate highway and was being driven by a 40-year-old male. The driver lost control of the vehicle and departed the roadway on the right side. The vehicle initiated a right side leading rollover that included 8 quarter-turns. During the crash, the vehicle's seat-mounted side air bags and side impact inflatable curtain (IC) air bags deployed. The driver was completely ejected from the vehicle through the left front window. The driver sustained blunt force trauma injuries to his head and chest, and was pronounced deceased at the scene. The Ford was towed from the scene due to damage and was later declared a total loss by the insurance company.

Figure 1. Subject vehicle, 2008 Ford Focus

The investigation was initiated by a the National Highway Transportation Safety Administration (NHTSA) during a Zone Center review of police reports. On January 30, 2009, DSI was forwarded the police report with instructions to obtain cooperation. DSI obtained permission to inspect the vehicle and the case was assigned on February 10, 2009. The vehicle was inspected in California on February 12, 2009. The vehicle was supported by the Bosch Crash Data Retrieval System (CDR) and the Event Data Recorder (EDR) data was imaged during the inspection. A truncated version of the Bosch report with the hexadecimal data removed is included as Attachment 2 to this report. The scene was inspected on February 17, 2009.

SUMMARY

Crash Site

This single vehicle crash occurred in December 2008 at 0715 hours. The crash occurred off-road adjacent to the eastbound lanes of an interstate highway (**Figure 2**). The two eastbound travel lanes were separated from the westbound lanes by a depressed dirt median. The lanes were bounded on the left by a solid yellow line and an asphalt shoulder. The lanes were bounded on right by a solid white line, a rumble strip, an asphalt shoulder, and a concrete curb. The curb measured 9 cm (3.5 in) high by 17 cm (6.7 in) wide. Beyond the curb to the south, there was an extended sandy descending embankment. The embankment had a negative grade that measured 16% near the area of roadway departure to 20% near the area of final rest. At this location, the roadway curved slightly to the right and there was a 1.2% positive grade.

Figure 2. Eastbound path of travel

The roadway was asphalt composition and was clear and dry with no obstructions present. Conditions were dark at the time of the crash and there were no streetlights present. The speed limit at this location was 105 km/h (65 mph).

Figure 3. Area of impact with sign and rollover

Figure 4. Look back view from final rest (west)

Pre-Crash

The Ford Focus was traveling eastbound in the right lane at an unknown speed. For undetermined reasons, the vehicle traveled off the right side of the roadway. The vehicle crossed the shoulder and passed over the low-lying curb. As the vehicle traveled down the embankment, it appears that the driver began steering back to the left in an attempt to return to the roadway. This would be a logical response to the driver's situation at this point.

Crash

The vehicle began a counterclockwise rotation and traveled approximately 36 m (118 ft) before the right side tires dug into the ground (**Figure 3**). The vehicle tripped and began a rollover with its right side leading. While rolling over, the vehicle struck and knocked down a roadway sign. The plane of the contact is not known. Any contact damage sustained in the event was masked by overlapping damage to the vehicle. The vehicle rolled at least eight quarter-turns. Near the end of the rollover event, the driver was fully ejected through the driver's window and landed on the south roadside (**Figure 4**). The distance from the trip point to final rest was 69 m (225 ft).

Post-Crash

The Ford came to rest on its wheels facing north. The final rest location was approximately 17.6 m (58 ft) south of the curb edge and 101 m (333 ft) east of the original location of roadway departure. The driver's body was located 11.3 m (37 ft) east of the vehicle. The driver sustained blunt force trauma injuries to his head and chest and was pronounced deceased at the scene.

VEHICLE DATA

The 2008 Ford Focus was identified by the Vehicle Identification Number (VIN): 1FAHP35N78Wxxxxxx. The vehicle date of manufacture was November 2007. The Ford was a 4-door sedan equipped with a 2.0-liter, 4-cylinder engine, automatic transmission, front wheel drive, traction control, front disc/rear drum brakes with an Antilock Brake System (ABS), tilt steering wheel column, and rack and pinion steering. The vehicle manufacturer's recommend tire size for

the front and rear tires was P195/60R15. The recommended cold tire pressure was 221 kPa (32 psi) for the front and rear. The Ford was configured with Hankook Optimo P195/60R15 tires. The tire manufacturer's recommended maximum tire pressure was 303 kPa (44 psi). The specific tire information was as follows:

Position	Measured Pressure	Measured Tread Depth	Restricted	Damage
LF	Tire flat	3 mm (4/32 in)	No	Flat, de-beaded, cut in sidewall
LR	179 kPa (26 psi)	6 mm (7/32 in)	No	None
RR	Tire flat	4 mm (5/32 in)	No	De-beaded
RF	Tire flat	2 mm (3/32 in)	Yes	De-beaded

The seating in the Ford was configured with front bucket seats with adjustable head restraints and rear bench seats with folding backs. The driver's seat was adjusted to mid-track position and was located 46 cm (18.1 in) forward of the B-pillar. The front right seat was adjusted 40 cm (15.7 in) forward of the B-pillar.

Vehicle Damage

Exterior Damage

The Ford sustained moderate damage from the rollover event. The damage to the top of the vehicle measured 429 cm (168.8 in) longitudinally and extended laterally from roof rail to roof rail. The damage along the left side extended from bumper corner to bumper corner and measured 445 cm (175.1 in). The damage along the right side extended from bumper corner to bumper corner and measured 445 cm (175.1 in). The front and rear bumper fasciae were dislodged from the vehicle. Both left side doors were jammed shut. The right rear door would not close or latch due to deformation. The maximum vertical crush was located at the left backlight header and measured 22 cm (8.7 in) (**Figure 5**). The maximum lateral crush was located at the left roof side rail and measured 14 cm (5.5 in).

Figure 5. Area of maximum vertical crush

The Collision Deformation Classification (CDC) for the rollover was 00TDDO3.

The driver's side window frame was deformed outward 35 cm (13.8 in). This damage corresponded to the occupant contacts located on the door and the lower window frame as well as the contact to

the left interior roof.

During the rollover sequence, the Ford struck and knocked down an interstate sign. The plane of contact between the Ford and the sign could not be determined due to overlapping damage

Interior Damage

The Ford sustained moderate interior damage as a result of passenger compartment intrusion. There were vertical intrusions to the windshield header, roof, and roof side rail. There were lateral intrusions to the A-pillar and roof side rail. The specific passenger compartment intrusions were as follows:

Row	Position	Intruded Component	Magnitude of Intrusion	Direction
2	Left	Roof side rail	26 cm (10.2 in)	Vertical
2	Left	C-pillar	19 cm (7.5 in)	Lateral
2	Left	Roof	16 cm (6.3 in)	Vertical
1	Left	Roof side rail	15 cm (5.9 in)	Lateral
1	Left	Roof	11 cm (4.3 in)	Vertical
1	Left	A-pillar	10 cm (3.9 in)	Lateral
1	Left	Windshield header	7 cm (2.8 in)	Vertical
1	Left	B-pillar	5 cm (2.0 in)	Lateral

The Ford sustained minor damage as a result of occupant loading during the rollover and the subsequent ejection. The left interior door panel exhibited scratches in the area of the maximum deformation of the door. The diagonal scratches were located at the rear upper quadrant of the door and measured 10 cm (3.9 in) in length and 2 cm (0.8 in) in width. The scratches ended 3 cm (1.2 in) below the top of the door panel. The left arm rest fractured at a point 8 cm (3.1 in) forward of the scratches. There was a smudge on the steering wheel hub and the key was broken off in the ignition. There was a hair deposit on the roof that began 28 cm (11.0 in) inboard of the left roof side rail and approximately 10 cm (3.9 in) aft of the driver's head restraint and measured 15 cm (5.9 in) by 5 cm (1.9 in). There was a grouping of seven longitudinally oriented black marks forward of the hair deposit. The marks began 32 cm (12.6 in) inboard of the left side roof rail. The longest mark measured 10 cm (3.9 in) in length.

Manual Restraints

The Ford was equipped with 3-point manual lap and shoulder belts for all five seating positions. The front belts were equipped with adjustable shoulder belt anchorage assemblies; the left side set to the full-up position and the right was set in the full-down position. The front safety belts were equipped with retractor pretensioners that did not actuate. The driver's safety belt was configured with a sliding latch plate and Emergency Locking Retractor (ELR). The remaining safety belts were configured with sliding latchplates and switchable ELR/Automatic Locking

Retractors (ALR).

Based on the vehicle inspection, EDR data, and driver kinematics, it was determined that the driver's belt was not used in this crash. There were no indications of loading to the belt webbing, latch plate or the D-ring anchorage assembly. The EDR recorded the driver's belt as unbuckled.

Supplemental Restraint Systems

The 2008 Ford Focus was equipped with an advanced occupant protection system. The system consisted of the Restraint Control Module (RCM), frontal air bags, left and right side impact IC air bags, seat-mounted side air bags, and front seat belt pretensioners. The IC air bags were designed to remain inflated for several seconds to enhance protection during an extended crash event, such as a rollover. The left and right IC air bags and seat-mounted side air bags deployed during the rollover as the side of the vehicle struck the ground. The left air bags deployed before the right IC air bag.

There were no frontal air bag deployments and the pretensioners did not actuate.

Figure 6. Driver's seat-mounted side air bag

The left and right seat-mounted side air bags deployed during the rollover event (**Figure 6**). The air bags measured 27 cm (10.6 in) in length and 25 cm (9.8 in) in height. The air bags were not configured with tethers or vent ports.

The IC air bags deployed from the roof cladding during the rollover event. The IC air bags were attached to the A-pillars by 8 cm (3.1 in) tethers which were connected to 35 cm (13.8 in) long sails. The sails were stitched to the forward aspect of the IC air bags. The IC air bags were connected to the D-pillars by 18 cm (7.0 in) tethers, and measured 166 cm (65.3 in) in length by 43 cm (16.9 in) in height.

Figure 7. Driver's side curtain air bag

There was a 10 cm (3.9 in) tear between the sail and the IC air bag on the left side (**Figure 7**). The tear began at the bottom and extended upwards (**Figure 8**). The damage probably occurred as a result of loading during the driver's ejection while the air bag was still inflated. The tear occurred at a seam and appears to have been displaced outward. There were no indications of external contacts such as abrasions or dirt deposits near the damaged area.

Event Data Recorder (EDR)

Two events were recovered from the EDR. The first recorded event was the driver side curtain air bag deployment.

The system status at time of data imaging indicated that the recording status for the first and second records were completed and locked.

The deployment data for the first record reported the following:

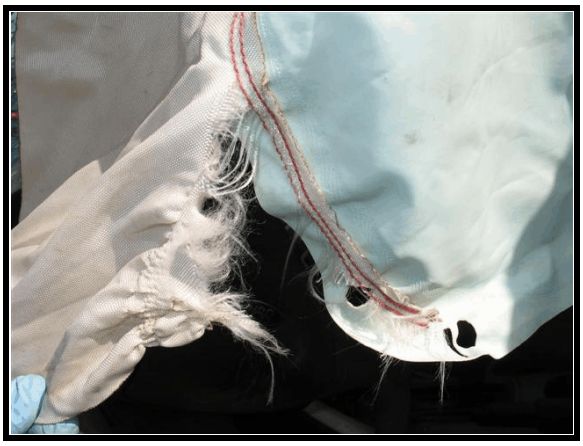


Figure 8. Tear between sail and side curtain air bag

- There were no deployments or deployment times for the driver/passenger frontal air bags.
- There were no pretensioner actuations.
- The driver side seat air bag deployment time was 68.5 msec.
- The passenger seat-mounted side air bag deployment time was recorded as N/A, but the air bag did deploy.
- The driver side curtain air bag deployment time was 66.5 msec.
- The passenger side curtain air bag deployment time was 80.0 msec.

The system status at event for the first record reported the following:

- The lifetime operating timer at algorithm wake-up was 1,904,824 seconds.
- The key on timer at algorithm wake-up was 652 seconds.
- The driver seat belt switch circuit status at algorithm wake-up was unbuckled.
- The driver seat track forward of switch point at algorithm wake-up indicated a rearward position.
- The passenger classification status at algorithm wake-up was invalid.
- The Occupant Classification Sensor (OCS) passenger state at algorithm wake-up was empty.

The pre-crash speed and throttle application for the first record appear to be invalid. The reported values were unrealistically high. The pre-crash data also reported the following for time -4 to 0 seconds:

- An ABS event was in progress.
- An Electronic Stability Program (ESP) event was in progress.
- A Traction Control System (TCS) event was in progress.
- The brake lamp switch was depressed.
- The OCS sensor status was invalid.

The lateral crash pulse for the first record indicated a cumulative Delta-V of -0.3 km/h (-0.02 mph) at -48 msec to 1.83 km/h (1.14 mph) at 0 msec. There was no recorded longitudinal crash pulse.

The deployment data for the second record reported the following:

- There were no deployments or deployment times for the driver/passenger frontal air bags.
- There were no pretensioner actuations.
- The driver side seat Air bag Deployment Time was 142.5 msec.
- The passenger side air bag deployment time was recorded as N/A, but the air bag did deploy.
- The driver side curtain air bag deployment time was 140.5 msec.
- The passenger side curtain air bag deployment time was N/A.

The imaged EDR report is included as Attachment 2 at the end of this report. This is a truncated copy of the report that is devoid of hexadecimal data.

Rollover Dynamics

The Ford Focus was equipped with front-wheel drive, ABS, traction control, and an automatic transmission. The vehicle had a Static Stability Factor (SSF) of 1.30. The SSF is an at-rest calculation of a vehicle's rollover resistance based on track width and the height of the center of gravity. The Ford had a Rollover Resistance Rating of four stars, indicating that the vehicle has a risk of rollover of between 10 and 20%[1]. As the Ford left the roadway, the driver attempted to steer left. The vehicle began a counterclockwise rotation as it traveled down the embankment. The negative 16-20% grade of the embankment exacerbated the rotation. ABS, ESP, and TCS were reported as being active but did not mitigate the roll dynamics due to the loose soil and uneven ground. As the right side tires dug into the dirt and loose gravel on the embankment, the vehicle tripped and rolled with its right side leading. The vehicle rolled eight quarter turns and came to rest near the base of the embankment. The estimated distance from the trip point to final rest was 69 m (226 ft).

[1]www.safercar.gov

OCCUPANT DEMOGRAPHICS

	Driver
Age/Sex:	40/Male
Seated Position:	Front left
Seat Type:	Bucket
Seat Track:	Mid-track. 46 cm (18.1 in) forward of B-pillar.
Height:	170 cm (67 in)
Weight:	75 kg (165 lbs)
Alcohol/Drug Involvement:	Unknown
Body Posture:	Unknown
Hand Position:	Unknown
Foot Position:	Unknown
Restraint Usage:	Lap and shoulder belt not used

OCCUPANT KINEMATICS

Driver Kinematics

The 40-year-old male driver was seated in an unknown posture. He was not wearing the 3-point manual lap and shoulder belt. As the vehicle began the counterclockwise rotation down the roadside and tripped, the driver moved inboard and up. As the vehicle rolled, the driver contacted the roof with his head (**Figure 9**) and then engaged the left door as he was fully ejected from the vehicle through the driver's window (**Figure 10**). The driver's door was

Figure 9. Hair deposit and black marks on roof

deformed outward during the ejection, probably between the 5th and 6th quarter turns.

The driver's body was located 11.3 m (37 ft) east of the vehicle. The driver sustained blunt force trauma injuries to his head and chest, and was pronounced deceased at 0734 hours at the scene. An autopsy was not conducted. A certificate of death was obtained and the cause of death was reported as: auto accident, with multiple fractures and bleeding.

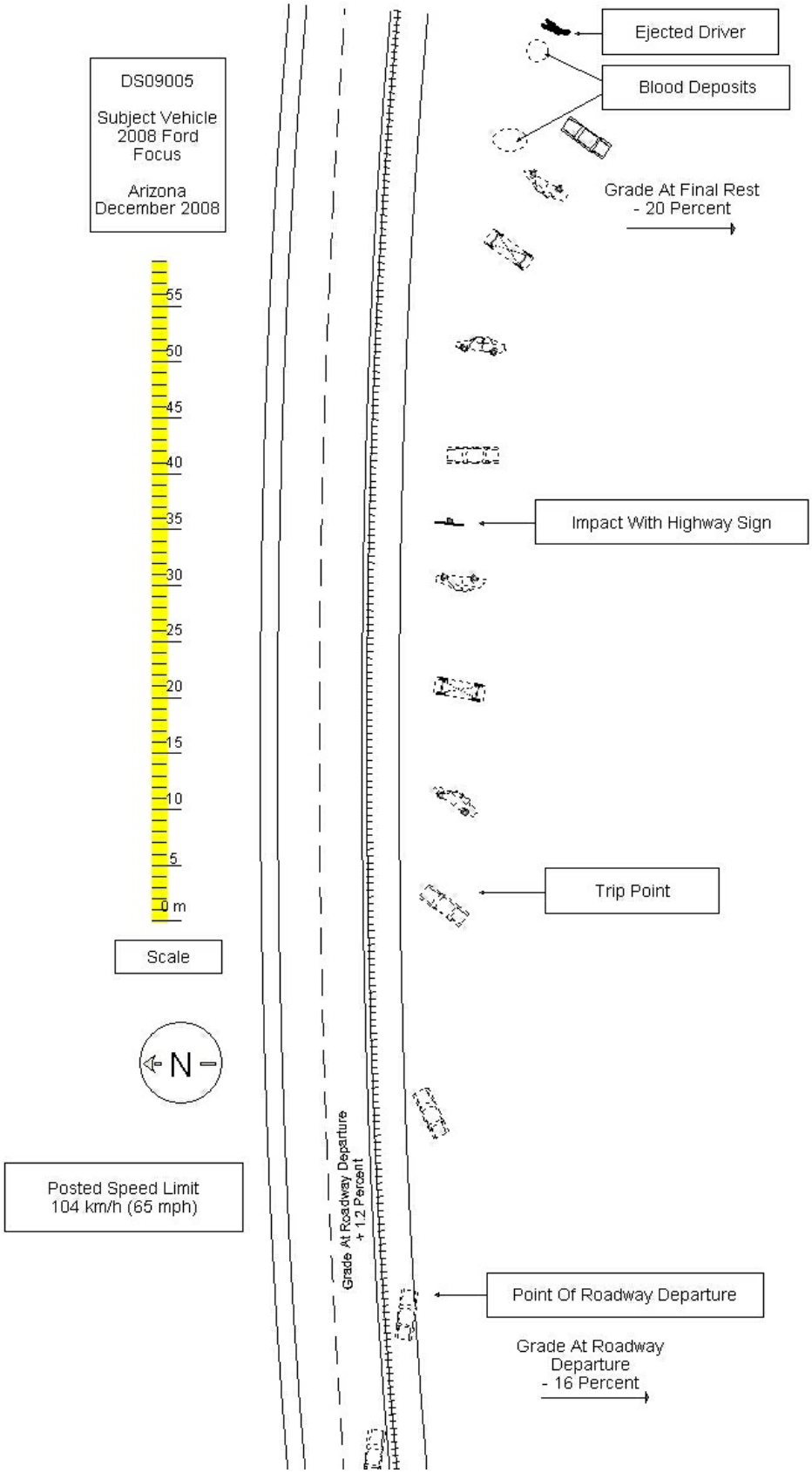
Figure 10. Scratches to door panel and fractured arm rest

Occupant Injuries

Driver: Injuries obtained from the police report and the certificate of death.

Injury	OIC Code	Injury Mechanism	Confidence Level
Blunt force trauma to head	115099,7,0	Ground	Probable
Blunt force trauma to chest	415099.7,0	Side door panel	Probable

Attachment 1. Scene Diagram



Attachment 2. Bosch Report

CDR File Information

User Entered VIN	1FAHP35N78W******
User	
Case Number	0905
EDR Data Imaging Date	Thursday, February 12 2009
Crash Date	
Filename	DS09005.CDR
Saved on	Thursday, February 12 2009 at 09:03:02 AM
Collected with CDR version	Crash Data Retrieval Tool 3.1
Reported with CDR version	Crash Data Retrieval Tool 3.3
EDR Device Type	airbag control module
ACM Adapter Detected During Download	No
Event(s) Recovered	2
First Event Recorded	Side Deployment

IMPORTANT NOTICE: Robert Bosch LLC recommends that the latest production release of Crash Data Retrieval software be utilized when viewing, printing or exporting any retrieved data from within the CDR program. This ensures that the retrieved data has been translated using the most recent information including but not limited to that which was provided by the manufacturers of the vehicles supported in this product.

Module Information

The retrieval of this data has been authorized by the vehicle's owner, or other legal authority such as a subpoena or search warrant, as indicated by the CDR tool user on Thursday, February 12 2009 at 09:03:02 AM .

Restraints Control Module Recorded Crash Events:
Deployment Events cannot be overwritten or cleared from the Restraints Control Module (RCM). Once the RCM has deployed any airbag device, the RCM must be replaced. The data from events which did not qualify as deployable events can be overwritten by subsequent events.
The RCM can store up to two deployment events.

Airbag Module Data Limitations:

• Restraints Control Module Recorded Vehicle Forward Velocity Change reflects the change in forward velocity that the sensing system experienced from the point of algorithm wake up. It is not the speed the vehicle was traveling before the event. Note that the vehicle speed is recorded separately five seconds prior to algorithm wake up. This data should be examined in conjunction with other available physical evidence from the vehicle and scene when assessing occupant or vehicle forward velocity change.
• Event Recording Complete will indicate if data from the recorded event has been fully written to the RCM memory or if it has been interrupted and not fully written.
• If power to the Airbag Module is lost during a crash event, all or part of the crash record may not be recorded.

Airbag Module Data Sources:
• Event recorded data are collected either INTERNALLY or EXTERNALLY to the RCM.

- INTERNAL DATA is measured, calculated, and stored internally, sensors external to the RCM include the following:
> The Driver and Passenger Belt Switch Circuits are wired directly to the RCM.
> The Driver's Seat Track Position Switch Circuit is wired directly to the RCM.
> The Side Impact Sensors (if equipped) are located on the side of vehicle and are wired directly to the RCM.
> The Occupant Classification Sensor is located in the front passenger seat and transmits data directly to the RCM on high-speed CAN bus.
> Front Impact Sensors (right and left) are located at the front of vehicle and are wire directly to the RCM.

- EXTERNAL DATA recorded by the RCM are data collected from the vehicle communication network from various sources such as Powertrain Control Module, Brake Module …

System Status at Time of Data Retrieval

VIN as programmed into RCM at factory	1FAHP35N78W******
Current Lifetime Operating Timer (sec)	1,913,058
Deployment Command Counter	3
First Record Recording Status	Completed & Locked
Second Record Recording Status	Completed & Locked
Restraints Control Module Part Number	8S43-14B321-BE
Restraints Control Module (Serial Number)	20181021
Occupant Classification System ECU (Serial Number)	44434?3448847305
Driver Front Crash Sensor (Serial Number)	0318E4AF
Driver 1st Row Side Crash Sensor (Serial Number)	05CC4F9E
Passenger 1st Row Side Crash Sensor (Serial Number)	05C1512C
Driver 2nd Row Side Crash Sensor (Serial Number)	031B447E
Passenger 2nd Row Side Crash Sensor (Serial Number)	031856EE

Deployment Data (First Record)

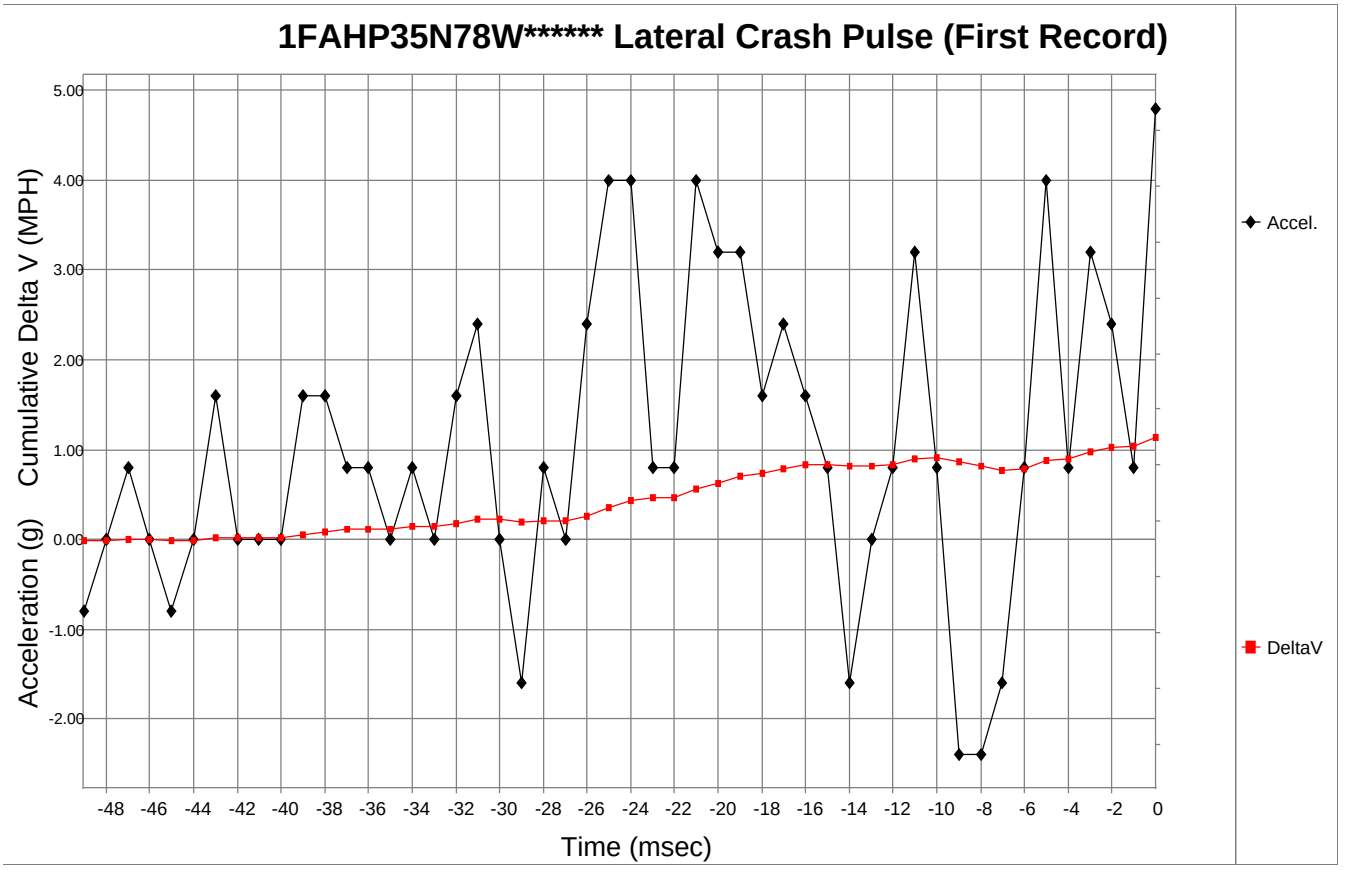
Driver First Stage Airbag Deployment Time (msec)	N/A
Driver Second Stage Airbag Deployment Time (msec)	N/A
Passenger First Stage Airbag Deployment Time (msec)	N/A
Passenger Second Stage Airbag Deployment Time (msec)	N/A
Driver Pretensioner Deployment Time (msec)	N/A
Passenger Pretensioner Deployment Time (msec)	N/A
Driver SIDE Airbag Deployment Time (msec)	68.5
Passenger SIDE Airbag Deployment Time (msec)	N/A
Driver CURTAIN Airbag Deployment Time (msec)	66.5
Passenger CURTAIN Deployment Time (msec)	80.0

System Status at Event (First Record)

Lifetime Operating Timer at Algorithm Wake-up (sec)	1,904,824
Key On Timer at Algorithm Wake-up (sec)	652
Battery voltage at Algorithm Wake-up (volts)	14.03
RCM Energy Reserve voltage at Algorithm Wake-up (volts)	24.90
Driver Seat Belt Switch Circuit Status at Algorithm Wake-up	Unbuckled
Driver Seat Belt Switch Fault at Algorithm Wake-up	No
Driver Seat Track Forward of Switch Point at Algorithm Wake-up	Not Forward
Driver Seat Track Position Switch Fault at Algorithm Wake-up	No
Passenger Seat Belt Switch Circuit Status at Algorithm Wake-up	Unbuckled
Passenger Seat Belt Switch Fault at Algorithm Wake-up	No
Passenger Classification Status at Algorithm Wake-up	Invalid
OCS Passenger State at Algorithm Wake-up	Empty
Driver Front Crash Sensor Fault at Algorithm Wake-up	No
Driver SIDE Crash Sensor Row 1 Fault at Algorithm Wake-up	No
Driver SIDE Crash Sensor Row 2 Fault at Algorithm Wake-up	No
Passenger Front Crash Sensor Fault at Algorithm Wake-up	No
Passenger SIDE Crash Sensor Row 1 Fault at Algorithm Wake-up	No
Passenger SIDE Crash Sensor Row 2 Fault at Algorithm Wake-up	No

Pre-Crash Data (First Record)

Time (sec)	-4	-3	-2	-1	0
Accelerator Pedal Position (%)	128	128	128	128	128
Vehicle Speed (MPH [km/h])	345.1 [555.4]	345.1 [555.4]	345.1 [555.4]	345.1 [555.4]	345.1 [555.4]
ABS Event in Progress	Yes	Yes	Yes	Yes	Yes
ESP Event in Progress	Yes	Yes	Yes	Yes	Yes
TCS Event in Progress	Yes	Yes	Yes	Yes	Yes
Brake Lamp Switch Depressed (from PCM)	Yes	Yes	Yes	Yes	Yes
RCM Serial Number Received by OCS	Yes	Yes	Yes	Yes	Yes
OCS Sensor Status	Invalid	Invalid	Invalid	Invalid	Invalid
OCS System Level 1 Fault	Yes	Yes	Yes	Yes	Yes
OCS System Level 2 Fault	Yes	Yes	Yes	Yes	Yes
Vehicle Calibration ID	FF	FF	FF	FF	FF
Vehicle Model Year Calibration ID	FF	FF	FF	FF	FF


1FAHP35N78W****** Lateral Crash Pulse (First Record)
Cumulative Delta V (MPH)
Acceleration (g)
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-48 -46 -44 -42 -40 -38 -36 -34 -32 -30 -28 -26 -24 -22 -20 -18 -16 -14 -12 -10 -8 -6 -4 -2 0
Time (msec)
Accel.
DeltaV

Longitudinal Crash Pulse (First Record)

Contains No Recorded Data

Lateral Crash Pulse (First Record)

Time (msec)	Recorded Vehicle Lateral Acceleration (g)	Cumulative Lateral Velocity Change (MPH [km/h])
-49	-0.80	-0.02 [-0.03]
-48	0.00	-0.02 [-0.03]
-47	0.80	0.00 [0.00]
-46	0.00	0.00 [0.00]
-45	-0.80	-0.02 [-0.03]
-44	0.00	-0.02 [-0.03]
-43	1.60	0.02 [0.03]
-42	0.00	0.02 [0.03]
-41	0.00	0.02 [0.03]
-40	0.00	0.02 [0.03]
-39	1.60	0.05 [0.08]
-38	1.60	0.09 [0.14]
-37	0.80	0.11 [0.18]
-36	0.80	0.12 [0.19]
-35	0.00	0.12 [0.19]
-34	0.80	0.14 [0.23]
-33	0.00	0.14 [0.23]
-32	1.60	0.18 [0.29]
-31	2.40	0.23 [0.37]
-30	0.00	0.23 [0.37]
-29	-1.60	0.19 [0.31]
-28	0.80	0.21 [0.34]
-27	0.00	0.21 [0.34]
-26	2.40	0.26 [0.42]
-25	4.00	0.35 [0.56]
-24	4.00	0.44 [0.71]
-23	0.80	0.46 [0.74]
-22	0.80	0.47 [0.76]
-21	4.00	0.56 [0.90]
-20	3.20	0.63 [1.01]
-19	3.20	0.70 [1.13]
-18	1.60	0.74 [1.19]
-17	2.40	0.79 [1.27]
-16	1.60	0.83 [1.34]
-15	0.80	0.84 [1.35]
-14	-1.60	0.81 [1.30]
-13	0.00	0.81 [1.30]
-12	0.80	0.83 [1.34]
-11	3.20	0.90 [1.45]
-10	0.80	0.91 [1.46]
-9	-2.40	0.86 [1.38]
-8	-2.40	0.81 [1.30]
-7	-1.60	0.77 [1.24]
-6	0.80	0.79 [1.27]
-5	4.00	0.88 [1.42]
-4	0.80	0.90 [1.45]
-3	3.20	0.97 [1.56]
-2	2.40	1.02 [1.64]
-1	0.80	1.04 [1.67]
0	4.80	1.14 [1.83]

Deployment Data (Second Record)

Driver First Stage Airbag Deployment Time (msec)	N/A
Driver Second Stage Airbag Deployment Time (msec)	N/A
Passenger First Stage Airbag Deployment Time (msec)	N/A
Passenger Second Stage Airbag Deployment Time (msec)	N/A
Driver Pretensioner Deployment Time (msec)	N/A
Passenger Pretensioner Deployment Time (msec)	N/A
Driver SIDE Airbag Deployment Time (msec)	142.5
Passenger SIDE Airbag Deployment Time (msec)	N/A
Driver CURTAIN Airbag Deployment Time (msec)	140.5
Passenger CURTAIN Deployment Time (msec)	N/A

System Status at Event (Second Record)

Lifetime Operating Timer at Algorithm Wake-up (sec)	1,904,826
Key On Timer at Algorithm Wake-up (sec)	654
Battery voltage at Algorithm Wake-up (volts)	12.92
RCM Energy Reserve voltage at Algorithm Wake-up (volts)	24.90
Driver Seat Belt Switch Circuit Status at Algorithm Wake-up	Unbuckled
Driver Seat Belt Switch Fault at Algorithm Wake-up	No
Driver Seat Track Forward of Switch Point at Algorithm Wake-up	Not Forward
Driver Seat Track Position Switch Fault at Algorithm Wake-up	No
Passenger Seat Belt Switch Circuit Status at Algorithm Wake-up	Unbuckled
Passenger Seat Belt Switch Fault at Algorithm Wake-up	No
Passenger Classification Status at Algorithm Wake-up	Invalid
OCS Passenger State at Algorithm Wake-up	Indeterminate
Driver Front Crash Sensor Fault at Algorithm Wake-up	No
Driver SIDE Crash Sensor Row 1 Fault at Algorithm Wake-up	No
Driver SIDE Crash Sensor Row 2 Fault at Algorithm Wake-up	No
Passenger Front Crash Sensor Fault at Algorithm Wake-up	No
Passenger SIDE Crash Sensor Row 1 Fault at Algorithm Wake-up	No
Passenger SIDE Crash Sensor Row 2 Fault at Algorithm Wake-up	No

Pre-Crash Data (Second Record)

Time (sec)	-4	-3	-2	-1	0
Accelerator Pedal Position (%)	128	128	128	128	128
Vehicle Speed (MPH [km/h])	345.1 [555.4]	345.1 [555.4]	345.1 [555.4]	345.1 [555.4]	345.1 [555.4]
ABS Event in Progress	Yes	Yes	Yes	Yes	Yes
ESP Event in Progress	Yes	Yes	Yes	Yes	Yes
TCS Event in Progress	Yes	Yes	Yes	Yes	Yes
Brake Lamp Switch Depressed (from PCM)	Yes	Yes	Yes	Yes	Yes
RCM Serial Number Received by OCS	Yes	Yes	Yes	Yes	Yes
OCS Sensor Status	Invalid	Invalid	Invalid	Invalid	Invalid
OCS System Level 1 Fault	Yes	Yes	Yes	Yes	Yes
OCS System Level 2 Fault	Yes	Yes	Yes	Yes	Yes
Vehicle Calibration ID	FF	FF	FF	FF	FF
Vehicle Model Year Calibration ID	FF	FF	FF	FF	FF

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