



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**



DOT HS 812 730

May 2019

Special Crash Investigations Guardrail End Terminal Investigation

Vehicle: 2010 Ford Fusion

Location: Missouri

Crash Date: May 2017

DISCLAIMER

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no responsibility for the contents or use thereof.

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the National Highway Traffic Safety Administration.

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 this report was published.

Dynamic Science, Inc. (2019, May). *Special Crash Investigations Guardrail End Terminal Investigation; Vehicle: 2010 Ford Fusion; Location: Missouri; Crash Date: May 2017* (Report No. DOT HS 812 730). Washington, DC: National Highway Traffic Safety Administration.

Technical Report Documentation Page

1. Report No. DOT HS 812 730	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Special Crash Investigations Guardrail End Terminal Investigation Vehicle: 2010 Ford Fusion Location: Missouri Crash Date: May 2017		5. Report Date May 2019	
		6. Performing Organization Code	
7. Author Dynamic Science, Inc.		8. Performing Organization Report No. Case No. DS17008	
9. Performing Organization Name and Address Dynamic Science, Inc. 299 West Cerritos Avenue Anaheim, CA 92805		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTNH22-12-C00271	
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration 1200 New Jersey Ave, SE Washington, DC 20590		13. Type of Report and Period Covered Technical Report Crash Date: May 2017	
		14. Sponsoring Agency Code	
15. Supplementary Notes This report documents the on-site guardrail end terminal crash investigation involving a 2010 Ford Fusion and an ET-Plus 4-inch guardrail end terminal, and the fatal injuries sustained by the driver.			
16. Abstract This single-vehicle crash occurred in the early morning on an interstate highway in Missouri in May 2017. The Ford was being driven westbound on an interstate highway by a belted 23-year-old male. The vehicle traveled off the right edge of the roadway and struck the ET-Plus end terminal of a guardrail with its front plane. The guardrail extruded to the field side for 8.8 m (29 ft) before kinking. The vehicle rotated clockwise 90 degrees and the left plane of the vehicle was penetrated by the kinking guardrail before coming to rest. The driver sustained severe injuries and was pronounced deceased at the scene.			
17. Key Words guardrail end terminal, fatality, fatality		18. Distribution Statement Document is available to the public from the National Technical Information Service, www.ntis.gov .	
19 Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21 No. of Pages 48	22. Price

Table of Contents

BACKGROUND	1
SUMMARY	1
Crash Site	1
Pre-Crash	2
Crash	2
Post-Crash	3
GUARDRAIL END TERMINAL DISCUSSION	3
2010 FORD FUSION	3
Description	3
Exterior Damage	4
Event Data Recorder	5
Interior Damage	6
Manual Restraint Systems	6
Supplemental Restraint Systems	6
NHTSA Recalls and Investigations	6
2010 FORD FUSION OCCUPANT	7
Driver Demographics	7
Driver Injuries	7
Driver Kinematics	8
CRASH DIAGRAM	9
Appendix A. FHWA Guardrail Form	A-1
Appendix B. Event Data Recorder Report 2010 Ford Fusion	B-1

Special Crash Investigations
Case Number DS17008
Guardrail End Terminal Investigation
Vehicle: 2010 Ford Fusion
Location: Missouri
Crash Date: May 2017

BACKGROUND

This report documents the on-site guardrail end terminal crash investigation involving a 2010 Ford Fusion and an ET-Plus 4-inch guardrail end terminal, and the fatal injuries sustained by the driver (**Figure 1**). This crash was initiated in response to a notification from a local transportation representative. The Federal Highway Administration (FHWA) reviewed the notification and associated images and determined that the guardrail qualified for investigation. The Special Crash Investigation (SCI) group of the National Highway Traffic Safety Administration assigned the case to the SCI team in May 2017. The scene and vehicle inspections took place in May 2017. Representatives from the State transportation department and FHWA were present during the inspections. The vehicle was supported by the Bosch Crash Data Retrieval system and the vehicle's event data recorder (EDR) was imaged during the inspection.



Figure 1. 2010 Ford Fusion, final rest looking east (state transportation photo)

This single-vehicle crash occurred in the early morning on an interstate highway in Missouri in May 2017. The Ford was being driven westbound on an interstate highway by a belted 23-year-old male. The vehicle traveled off the right edge of the roadway and struck the ET-Plus end terminal of a guardrail with its front plane. The guardrail extruded to the field side for 8.8 m (29 ft) before kinking. The vehicle rotated clockwise 90 degrees and the left plane of the vehicle was penetrated by the kinking guardrail before coming to rest. The driver sustained severe injuries and was pronounced deceased at the scene.

SUMMARY

Crash Site

The crash site was the westbound lanes of a three-lane, divided interstate highway in a suburban area of Missouri (**Figure 2**). The concrete roadway had a slight left curve with a radius of 2,358 m (7,737 ft). The roadway had a super elevation of 1.3 percent and a -2 percent grade. The travel lanes were separated by dashed white lines. The roadway was bordered on the right by a white fog line (with a rumble strip), concrete shoulder, and a metal W-beam guardrail. It was bordered on the left by a yellow fog line, concrete shoulder, and a metal W-beam guardrail. The roadway was dry and the lighting condition was dark at the time of the crash. The posted speed limit was 112 km/h (70 mph). The

weather at the nearest reporting station was 11.6 degrees C (53 degrees F), 69 percent humidity, 16 km (10 miles) visibility, and the winds were out of the southwest at 11.1 km/h (6.9 mph). A crash diagram is attached at the end of this technical report.

Pre-Crash

The Ford was traveling westbound in the first lane from the right at an EDR-reported speed of 135 km/h (83.0 mph) at -5.0 seconds prior to algorithm enable (AE). The steering wheel angle was -4.6 degrees, the service brake was off, and the ABS was non-engaged. A negative steering wheel angle indicates a right turn. The speed remained generally consistent and the service brakes remained off during the next 5 seconds. The steering wheel angle progressed from -4.0 degrees at -4.0 seconds, to -1.1 degrees at -3.0 seconds, to -0.7 degrees at -2.0 seconds and the vehicle gradually moved to the right and departed the roadway. At -1.0 seconds, the steering wheel angle turned in the opposite direction to 5.0 degrees. This was probably a driver response to the vehicle crossing the right rumble strip. The steering wheel angle was 30.1 degrees just prior to impact.

Crash

As the vehicle departed the shoulder on the right, the front plane struck the ET-Plus barrier end terminal (**Figure 3**). The WinSMASH program calculated at a barrier equivalent speed (BES) of 29 km/h (18 mph). The EDR reported a maximum longitudinal delta V of -34.62 km/h (-21.51 mph) and a maximum lateral delta V of 2.03 km/h (1.26 mph). The driver's frontal, inflatable side curtain and seat-mounted side air bags deployed and the driver's seat belt pretensioner actuated during this impact. The guardrail extruded to the field side for 8.8 m (29 ft) before kinking (**Figure 4**). The vehicle rotated clockwise 90 degrees and the left plane of the vehicle was struck and penetrated by the kinking guardrail (**Figure 5**). The EDR reported an unlocked event that included the impacts to the left side of the vehicle. The EDR-reported maximum longitudinal delta V was 2.94 km/h (1.82 mph). The maximum lateral delta V was -9.30 km/h (-5.78 mph). The vehicle traveled an



Figure 2. Westbound approach



Figure 3. Point of impact area with guardrail end treatment, looking west

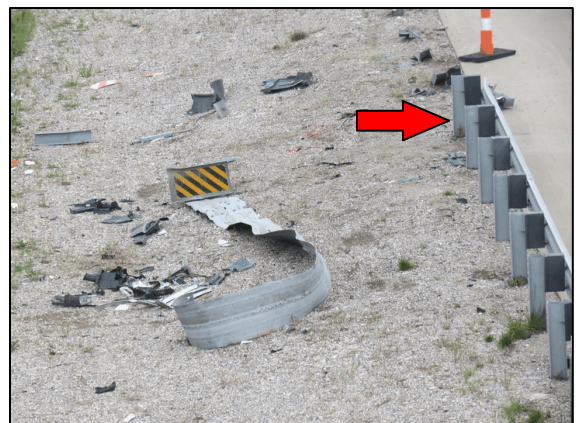


Figure 4. Extruded guardrail, looking east. Red arrow marks post 10.

additional 8.8 m (29.0 ft) before coming to rest facing north with the left side of the vehicle near guardrail post 10.

Post-Crash

The driver was entrapped by the left door and the guardrail that had intruded into the vehicle. A passerby contacted emergency services at 0336 hours. The driver was alive when emergency medical services (EMS) personnel arrived and began extrication. The guardrail was cut at post 10 and the roof of the vehicle were removed to access the driver. Advanced cardiac life support (ACLS) protocol was administered but the driver was pronounced deceased at the scene at 0443 hours.

GUARDRAIL END TERMINAL DISCUSSION

The guardrail end terminal in this crash was a Trinity ET-Plus 4-inch extruder-type end treatment (Figure 6). The head measured 71.0 x 38.0 cm (28.0 x 15.0 in) with a guide chute exit height of 29.2 cm (11.5 in). There were no indications of previous damage. An anchor cable was present and initially attached to post 1. The steel posts measured 15.2 x 10.1 cm (6.0 x 4.0 in) and were assembled with composite offset blocks and 187.9 cm (74.0 in) spacing. The guardrail height was 71.1 cm (28.0 in). During the crash the rail extruded 8.8 m (29.0 ft) to the field side. The anchor cable was disconnected as the guardrail head was displaced. Post 1 was displaced from its position. Posts 2-9 were deformed to the west along the path of the vehicle. The guardrail kinked in four places, beginning at post 6 and ending at post 10. The kinked guardrail penetrated the vehicle. There were four distinct sections, measuring 107.0 cm (42.1 in), 208.0 cm (81.8 in), 192.0 cm (75.5 in), and 162.0 cm (63.7 in) in length. The total length of rail damaged (including extruded rail) was 17.6 m (58 ft).

2010 FORD FUSION

Description

The 2010 Ford Fusion was a 4-door sedan identified by the Vehicle Identification Number 3FAHP0JA6ARxxxxxx. The vehicle was configured with a 2.5-liter, 4-cylinder, gasoline engine, automatic transmission, front-wheel drive, and 4-wheel ABS. The vehicle manufacturer's



Figure 5. Kinked guardrail in 2010 Ford Fusion



Figure 6. Trinity ET-Plus 4-inch end treatment

recommended tire size was P225/50R17 with a cold pressure of 228 kPa (33 psi) or P225/45R18 with a cold pressure of 241 kPa (35 psi). The vehicle was equipped with Primewell P225/50R17 tires. The specific tire information was as follows.

Position	Measured Tread Depth	Restricted	Damage
LF	6 mm (8/32 in)	No	Debeaded
LR	6 mm (8/32 in)	No	None
RR	6 mm (8/32 in)	No	None
RF	5 mm (7/32 in)	No	Debeaded

The Ford was configured with seating for five occupants. The front row was equipped with bucket seats with adjustable head restraints. Both front seats were adjusted to the middle track position. The second row was equipped with a bench seat with folding backs with adjustable head restraints.

Exterior Damage

The Ford sustained moderate front plane damage from the impact with the guardrail end treatment (**Figure 7**). The direct damage began at the right bumper corner and extended 32.0 cm (12.5 in) to the left. The Field L extended from bumper corner to bumper corner. Thirteen measurements were taken at bumper backing bar level by the Nikon Total Station and the Faro Blitz program computed crush measurement in six increments as follows: C1 = 0 cm, C2 = 5.0 cm (1.9 in), C3 = 16.0 cm (6.2 in), C4 = 29.0 cm (11.4 in), C5 = 23.0 cm (9.0 in), C6 = 16.0 cm (6.6 in). The calculated principal direction of force was 0 degrees. The collision deformation classification (CDC) was 12FREE2.



Figure 7. Frontal damage, 2010 Ford Fusion

As the vehicle rotated and the guardrail penetrated the left side, the vehicle sustained moderate left plane damage (**Figure 8**). The type of damage sustained and damaged caused by extrication precluded obtaining crush measurements. The direct damage began at the left front corner and extended rearward 190.0 cm (74.8 in). The estimated CDC was 09LYEW3.

Event Data Recorder

The Ford was equipped with a restraint control module (RCM) that had EDR capability to store deployment and non-deployment events. The data from events which do not qualify as deployable events can be overwritten by subsequent events. The RCM can store up to two deployment events. Both types of events can contain pre-crash and crash data. For the pre-crash data there is a 5-second buffer that records vehicle speed, accelerator pedal percentage, service brake, ABS activity, traction control via brakes, and traction control via engine.

The data from the Fords's EDR was imaged using the Bosch Crash Data Retrieval Tool version using the direct to module method with external power and reported using version 17.9.1. Two events were recovered from ignition cycle 13,959, one locked frontal event and an unlocked event.



Figure 8. Left plane damage, 2010 Ford Fusion

The first event resulted from the impact with the guardrail end treatment and the crash record was locked. The maximum longitudinal delta V was -34.62 km/h (-21.51 mph). The maximum lateral delta V was 2.03 km/h (1.26 mph). The Bosch CDR report is included at the end of this report as Attachment B and the EDR-reported data not discussed elsewhere in this report was summarized as follows.

The pre-crash data at EDR Time "0" was as follows.

Vehicle Speed:	134.0 km/h (83.3 mph)
Accelerator pedal:	60%
Service Brake:	Off
Engine RPM:	3,000
ABS Activity:	Engaged
Stability Control:	Engaged
Traction Control via Brakes	Non-engaged
Traction Control via Engine	Non-engaged

The second event resulted from contact to the left plane of the vehicle as the guardrail beams kinked. Multiple non-deployment events were sensed and event 4 was recorded in an unlocked record. The maximum longitudinal delta-V was 2.94 km/h (1.82 mph). The maximum lateral delta V was -9.03 km/h (-5.78 mph).

Interior Damage

The Ford sustained major interior damage from intrusions, occupant contacts, integrity loss, and extrication efforts (**Figure 9**). The left door was deformed laterally. The driver seat was deformed longitudinally. The steering wheel rim was deformed forward 12.0 cm (4.7 in). Four segments of the guardrail beam intruded into both the front and second row. All the doors were jammed shut. The roof and left doors were removed during extrication.

Manual Restraint Systems

The front row was equipped with driver and front right 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 (ELR), and an adjustable upper anchor that was adjusted to an unknown position (due to post-crash damage). The front right passenger's seat belt was equipped the same as the driver's, but had a switchable ELR/automatic locking retractor (ALR). The front seat positions were equipped with retractor-mounted seat belt pretensioners. The driver's seat belt pretensioner actuated during the crash. The EDR reported that the driver's seat belt was "Buckled." The second row was equipped with lap and shoulder seat belts for the three second row seat positions.

Supplemental Restraint Systems

The Ford's supplemental restraint systems included a restraint control module, driver's and passenger's frontal air bags, front row seat-mounted side air bags, and front and second row side impact inflatable curtain (IC) air bags.

Both stages of the driver's frontal air bag deployed from the steering wheel hub during the impact with the guardrail end treatment. The left seat-mounted side air bag and left IC air bags also deployed during this impact (**Figure 10**). The frontal air bag and seat-mounted side air bag were entrapped by the intruding guardrail beams and could not be measured. The left IC air bag measured 38.0 x 150.0 cm (14.9 x 59.0 in).

NHTSA Recalls and Investigations

There were no recalls or investigations associated with this vehicle at the time of the vehicle inspection.



Figure 9. Interior damage, 2010 Ford Fusion



Figure 10. Left IC air bag, 2010 Ford Fusion

2010 FORD FUSION OCCUPANT

Driver Demographics

Age/Sex: 23 years/male
Height: 178 cm (70 inches)
Weight: 112 kg (247 lbs)
Eyewear: Unknown
Seat type: Bucket
Seat track position: Middle
Manual restraint usage: Lap and shoulder seat belt
Usage source: Vehicle inspection, EDR report, police statement
Air bags: Driver frontal air bag, seat-mounted side air bag, and IC air bag deployed.
Alcohol/drug data: BAC = .155 grams per deciliter
Egress from vehicle: Entrapped by vehicle components and guardrail beam
Transport from scene: None
Type of medical treatment: Standard ACLS protocol at scene

Driver Injuries

Inj. No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Left thigh, traumatic amputation (includes femur fracture)	811002.4	Guardrail	Certain
2	Multiple left side rib fractures	450210.2	Door	Probable
3	Hemothorax, left	442200.3	Door	Probable
4	Multiple abrasions, left anterolateral and lateral aspects of chest	410202.1	Door	Probable
5	Multiple abrasions, left lateral and anterolateral aspects of abdomen	510202.1	Door	Probable
6	Multiple abrasions, posterior of right hand	710202.1	Unknown	Unknown
7	Multiple abrasions, left upper extremity	710202.1	Guardrail	Possible
8	Laceration, left bicep	710602.1	Guardrail	Possible
9	7.0 x 3.0 cm (2.7 x 1.2 in)	810202.1	Guardrail	Probable

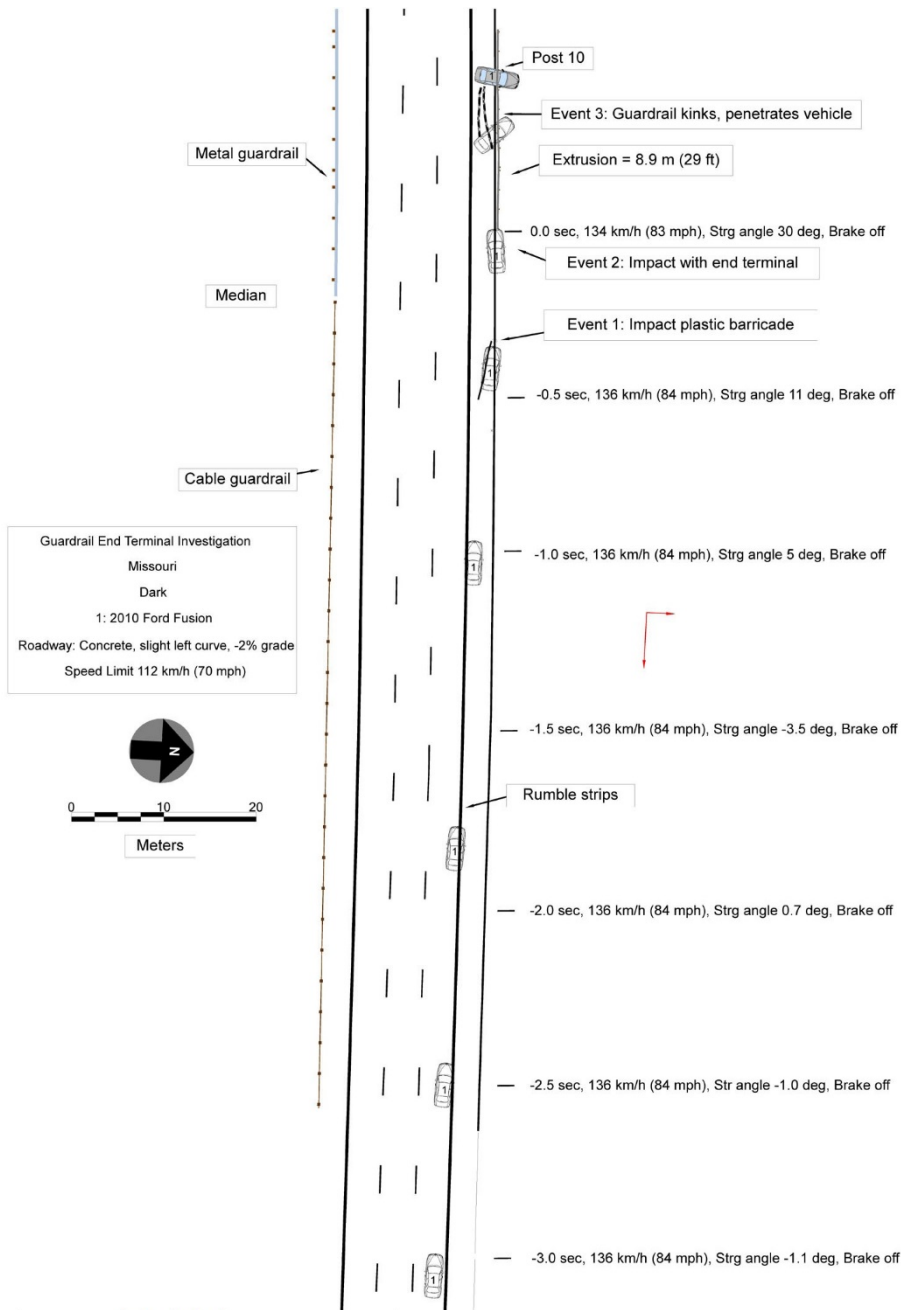
Inj. No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
10	abrasion, 7.0 x 1.0 cm (2.7 x 0.4 in) laceration anterior aspect of right thigh	810600.1		

Source: Autopsy Report

Driver Kinematics

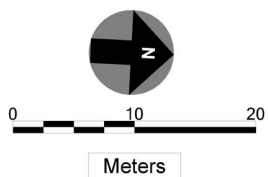
The 23-year-old male driver was belted and seated in an unknown posture. Given the gradual roadway departure and lack of evasive maneuvers it appears that the driver may have been asleep or unconscious. The driver may have been alerted as the vehicle crossed the rumble strip along the right shoulder. According to the EDR report, the steering wheel angle indicated that the driver tried to steer to the left at -1.0 seconds prior to impact. At impact with guardrail end treatment, the driver was displaced forward. The seat belt pretensioner actuated and the driver's frontal, seat-mounted side, and left IC air bags deployed. As the vehicle rotated the driver was displaced to the left and contacted the left door and the intruding guardrail beams. The driver remained belted throughout. He was alive when EMS personnel arrived and began extrication. The guardrail was cut at post 10 and the roof of the vehicle was removed to access the driver. Shortly after being extricated the driver died.

CRASH DIAGRAM



	 www.nhtsa.gov
Case Number:	DS17008

Guardrail End Terminal Investigation
 Missouri
 Dark
 1: 2010 Ford Fusion
 Roadway: Concrete, slight left curve, -2% grade
 Speed Limit 112 km/h (70 mph)



Cable guardrail

Post 10

Event 3: Guardrail kinks, penetrates vehicle

Extrusion = 8.9 m (29 ft)

0.0 sec, 134 km/h (83 mph), Strg angle 30 deg, Brake off

Event 2: Impact with end terminal

Event 1: Impact plastic barricade

-0.5 sec, 136 km/h (84 mph), Strg angle 11 deg, Brake off

-1.0 sec, 136 km/h (84 mph), Strg angle 5 deg, Brake off

-1.5 sec, 136 km/h (84 mph), Strg angle -3.5 deg, Brake off

Rumble strips

-2.0 sec, 136 km/h (84 mph), Strg angle 0.7 deg, Brake off



Case Number:



DS17008

APPENDIX A. FHWA GUARDRAIL FORM

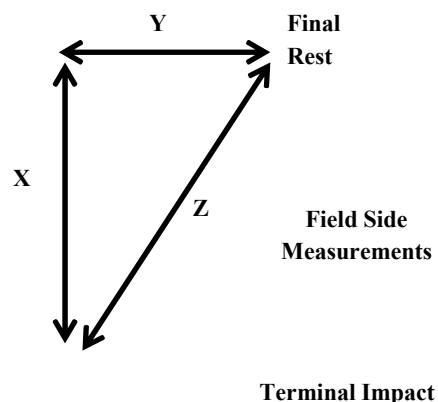
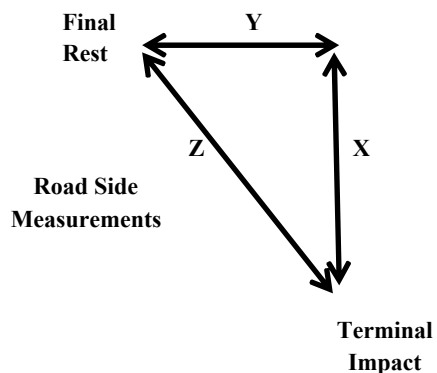
Case No.: DS17008

PREPOPULATED DATA (BY OTHERS)			
Date of Crash	May 2017	TIME OF CRASH (MILITARY)	Early morning
Case Number	DS17008	State	MO
Traffic Route	44	Direction (Southbound = SB)	WB
Ambient Conditions (at time of crash)			
Temperature (°F)	53	Lighting	Dark
Atmospheric	Clear		

SCENE INFORMATION	
Type of area where crash occurred	☐ Urban ☐ Rural ☒ Suburban
Terminal on a horizontal curve?	☐ No ☒ Curve/LT ☐ Curve/RT
Estimated or Reconstructed Speed at Impact (mph)	88
Est. distance (straight line) from terminal impact to COM final rest position (ft.)	Z = 53 ft
Est. distance (longitudinal) along guardrail from terminal impact to COM final resting location (ft.)	X = 53 ft
Est. distance (normal) from either 1. the white paint line; or 2. roadway/shoulder/pavement edge to COM rest position (ft.)	Y = 7.5 ft
Super elevation	☐ +2% ☒ -2% ☐ NONE or FLAT
Curve Radius (ft.)	7,737

KEY:

- COM - Center of Mass of Vehicle
- Distance Measurements



Case No.: DS17008

ON-SCENE INFORMATION			
End Treatment Type	☒ Extruder	☐ ET2000	☒ ET-PLUS 4in ☐ ET-PLUS 5in ☐ SKT
	☐ Telescope	☐ X-LITE	☐ FLEAT ☐ SOFT STOP
Curb?	☒ No	☐ AASHTO Type A ☐ AASHTO Type B ☐ AASHTO Type C	
	☐ Yes	☐ AASHTO Type D ☐ AASHTO Type E	
	☐ AASHTO Type F ☐ AASHTO Type G ☐ AASHTO Type H		
Curb Height: NA			

GUARDRAIL INSTALLATION									
Post No.	Post		Offset Block		PRE-Existing Damage		Offset to post or post hole (ft.)		Spacing to next post (ft. -in.)
	Type	Dim.	Type	Dim.	Yes No Unknown	Describe	Travel way	Curb	
	Steel Wood Other	D x W (in.) or Dia. (in.)	Steel Wood Composite	D x W (in.)					
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	Steel	6 x 4	None	NA	No		10.6	NA	0
2	Steel	6 x 4	None	NA	No	NA	10.6	NA	6ft 6 in

Case No.: DS17008

Post No.	Post		Offset Block		PRE-Existing Damage		Offset to post or post hole (ft.)		Spacing to next post (ft. -in.)
	Type	Dim.	Type	Dim.	Yes No Unknown	Describe	Travel way	Curb	
	Steel Wood Other	D x W (in.) or Dia. (in.)	Steel Wood Composite	D x W (in.)					
3	Steel	6 x 4	Composite	Unk	No	NA	11.0	NA	6ft 2in
4	Steel	6 x 4	Composite	Unk	No	NA	11.0	NA	6ft 3 in
5	Steel	6 x 4	Composite	Unk	No	NA	11.0	NA	6ft 1in
6	Steel	6 x 4	Composite	Unk	No	NA	10.9	NA	6ft 8in
7	Steel	6 x 4	Composite	Unk	No	NA	11.0	NA	6ft 2in
8	Steel	6 x 4	Composite	4 x 7.5	No	NA	11.0	NA	6ft 5in

Case No.: DS17008

Post No.	Post		Offset Block		PRE-Existing Damage		Offset to post or post hole (ft.)		Spacing to next post (ft. -in.)
	Type	Dim.	Type	Dim.	Yes No Unknown	Describe	Travel way	Curb	
	Steel Wood Other	D x W (in.) or Dia. (in.)	Steel Wood Composite	D x W (in.)					
9	Steel	6 x 4	Composite	4.0 x 7.5	No	NA	10.8	NA	6ft 2in
10	Steel	6 x 4	Composite	4.0 x 7.5	No	NA	10.8	NA	6ft 2in
11	Steel	6 x 4	Composite	4.0 x 7.3	No	NA	10.8	NA	6ft 4in
12	Steel	6 x 4	Composite	4.0 x 7.3	No	NA	10.8	NA	6ft 2in

Additional Comments

Case No.: DS17008

EXTRUDER			
Feeder Channel Width at impact head	☒ 4 inches ☐ 5 inches ☐ Other _____		
Guide Chute Exit Height (in.)	11.5		
Connection of feeder channels to head damaged?	☐ No ☒ Yes	Are Welds Broken?	☒ No ☐ Yes
Anchor Cable Present?	☐ No ☒ Yes	Connected?	☒ No ☐ Yes
Rail Extrusion?	☐ No ☒ Yes	Length (ft. in.)	29 ft
Rail Extrusion Direction	☐ Traffic Side ☒ Field Side		
Total Length of Rail Damaged (ft.) [total length would include extruded rail plus damaged rail downstream from head.]	58 ft		

TELESCOPE			
Rail Displacement	☐ No	☐ Yes; Length:	No of Panels Displaced ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

ALL-SYSTEM PERFORMANCE			
Railkinks Downstream of Head?	☐ No	☒ Yes	No. of Kinks in Rail: 4
Was there intrusion into the Occupant Compartment by foreign object (guardrail)?		☐ No ☒ Yes	
Did vehicle impact other objects after impact with terminal?		☒ No ☐ Yes	
Object Contacted	NA		

ALL-SYSTEM PERFORMANCE ENVIRONMENT			
SIDESLOPE	50 ft in advance of Post 1	At Post 1	50 ft Past Post 1
Percent - %	-1.7	-4.7	-6.5
Adjacent Lane Width (ft)	12.3		
Lane Type (NAS EDS Variable: Sur. Type)	Concrete		
Shoulder Type	Concrete		
Shoulder Width (ft)	9.5		
Guardrail Height (in)	28		

Case No.: DS17008

VEHICLE INFORMATION	
Vehicle Type (NHTSA Input)	2010 Ford Fusion
Vehicle Identification Number (VIN)	3FAHP0JA6ARxxxxxx
Vehicle Mass (NASS var.: veh.wgt)	3284
Vehicle orientation upon impact	☒ Case Type 1 ☐ Case Type 2 ☐ Case Type 3 ☐ Case Type 4 ☐ Case Type 5 ☐ Case Type 6 ☐ Case Type 7 ☐ Case Type 8 ☐ Other
If 'Other', describe	
Collision Deformation Classification	12FREW2
Delta-V	-21.5 mph
Occupant Compartment Penetration of rail	☐ No ☒ Yes Describe:
Quarter Turns (NASS EDS variable: Rollover)	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17+
Object Precipitating Rollover, (NASS EDS variable: Rollobj)	NA
Rollover Type, Terhune Scale, (NASS EDS variable: rolintyp)	NA

APPENDIX B.
EVENT DATA RECORDER REPORT 2010 FORD FUSION¹

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	3FAHP0JA6AR*****
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	201750S3DS17008_V1_ACM.CDRX
Saved on	
Imaged with CDR version	Crash Data Retrieval Tool 17.3
Imaged with Software Licensed to (Company Name)	Company Name information was removed when this file was saved without VIN sequence number
Reported with CDR version	Crash Data Retrieval Tool 17.9.1
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
ACM Adapter Detected During Download	Yes
Event(s) recovered	locked frontal event unlocked event

Comments

No comments entered.

The retrieval of this data has been authorized by the vehicle's owner, or other legal authority such as a court order or search warrant, as indicated by the CDR tool user on .

Data Limitations

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.
- For 2011 Ford Mustangs, the Steering Wheel Angle parameter indicates the change in steering wheel angle from the previously recorded sample value and does not represent the actual steering wheel position.

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, etc.

02007_RCM-RC6_r002

System Status at Time of Retrieval

VIN as programmed into RCM at factory	3FAHP0JA6AR*****
Current VIN from PCM	3FAHP0JA6AR*****
Ignition cycle, download (first record)	13,960
Ignition cycle, download (second record)	13,960
Restraints Control Module Part Number	9E53-14B321-BK
Restraints Control Module Serial Number	3112420100000000
Restraints Control Module Software Part Number (Version)	9E53-14C028-AB
Left/Center Frontal Restraints Sensor Serial Number	120F85EF
Left Side Restraint Sensor 1 Serial Number	1207B339
Left Side Restraint Sensor 2 Serial Number	1206F863
Right Frontal Restraints Sensor Serial Number	120F6AB6
Right Side Restraint Sensor 1 Serial Number	0C57D464
Right Side Restraints Sensor 2 Serial Number	120FC211

System Status at Event (First Record)

Recording Status	Locked Record
Complete file recorded (yes,no)	Yes
Multi-event, number of events (1,2)	1
Time from event 1 to 2 (msec)	N/A
Lifetime Operating Timer at event time zero (seconds)	13,941,870
Key-on Timer at event time zero (seconds)	620
Vehicle voltage at time zero (Volts)	13.77
Energy Reserve Mode entered during event (Y/N)	Yes
Time Driver Front Satellite Sensor Lost Relative to Time Zero (msec)	4.5
Time Passenger Front Satellite Sensor Lost Relative to Time Zero (msec)	5.0
Time Driver First Row Satellite Sensor Lost Relative to Time Zero (msec)	99.5
Time Passenger Second Row Satellite Sensor Lost Relative to Time Zero (msec)	99.5

Faults Present at Start of Event (First Record)

No Faults Recorded

Deployment Data (First Record)

Frontal airbag deployment, time to first stage deployment, driver (msec)	11.5
Frontal airbag deployment, time to 2nd stage, driver (msec)	16.5
Side curtain airbag deployment, time to deploy, driver side (msec)	30.5
Side (thorax) air bag deployment, time to deploy, driver (msec)	30.5
Frontal pretensioner (retractor) deployment, time to fire, driver (msec)	11.5
Maximum delta-V, longitudinal (MPH [km/h])	-21.51 [-34.62]
Time, maximum delta-V longitudinal (msec)	250
Maximum delta-V, lateral (MPH [km/h])	1.26 [2.03]
Time, maximum delta-V lateral (msec)	42
Left or center front, satellite Sensor discriminating deployment	Yes
Left or center, front satellite Sensor safing	Yes
Right, front satellite sensor discriminating deployment	Yes
Right, front satellite sensor safing	Yes
RCM, front sensor discriminating deployment	Yes
RCM, front sensor safing	Yes

Pre-Crash Data -1 sec (First Record)

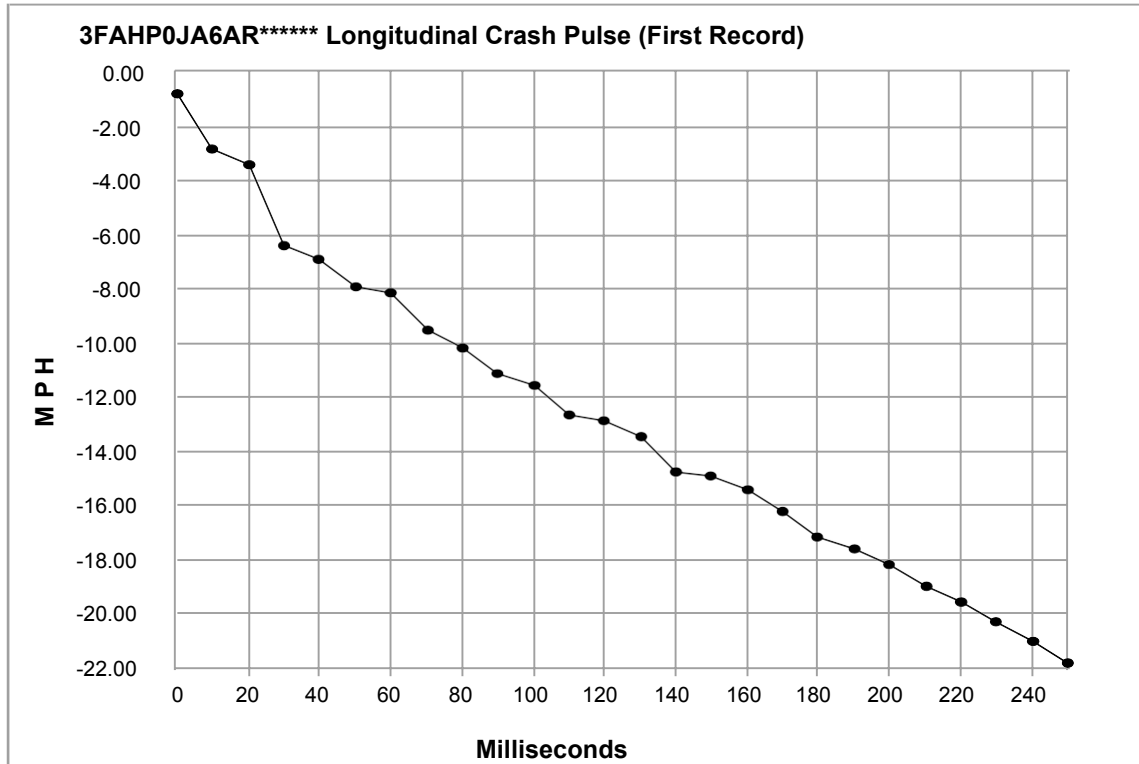
Ignition cycle, crash	13,959
Frontal air bag warning lamp, on/off	Off
Occupant size classification, front passenger (Child size Yes/No [Hex value])	No [\$01]
Safety belt status, driver	Driver Buckled
Seat track position switch, foremost, status, driver	Not Forward
Safety belt status, front passenger	Passenger Not Buckled
Brake Telltale	Off
ABS Telltale	Off
Stability Control Telltale	Off
Speed Control Telltale	Off
Powertrain Wrench Telltale	Off
Powertrain Malfunction Indicator Lamp (MIL) Telltale	Off

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

Times (sec)	Speed vehicle indicated MPH [km/h]	Accelerator pedal, % full	Service brake, on/off	Engine rpm	ABS activity (engaged, non-engaged)	Stability control (engaged, non-engaged)	Traction Control via Brakes (engaged, non-engaged)	Traction Control via Engine (engaged, non-engaged)
- 5.0	83.9 [135.0]	40	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 4.5	83.9 [135.0]	40	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 4.0	84.5 [136.0]	39	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 3.5	84.5 [136.0]	39	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 3.0	84.5 [136.0]	38	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 2.5	84.5 [136.0]	38	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 2.0	84.5 [136.0]	38	Off	3,500	non-engaged	non-engaged	non-engaged	non-engaged
- 1.5	84.5 [136.0]	38	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 1.0	84.5 [136.0]	38	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 0.5	84.5 [136.0]	33	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
0.0	83.3 [134.0]	60	Off	3,000	engaged	engaged	non-engaged	non-engaged

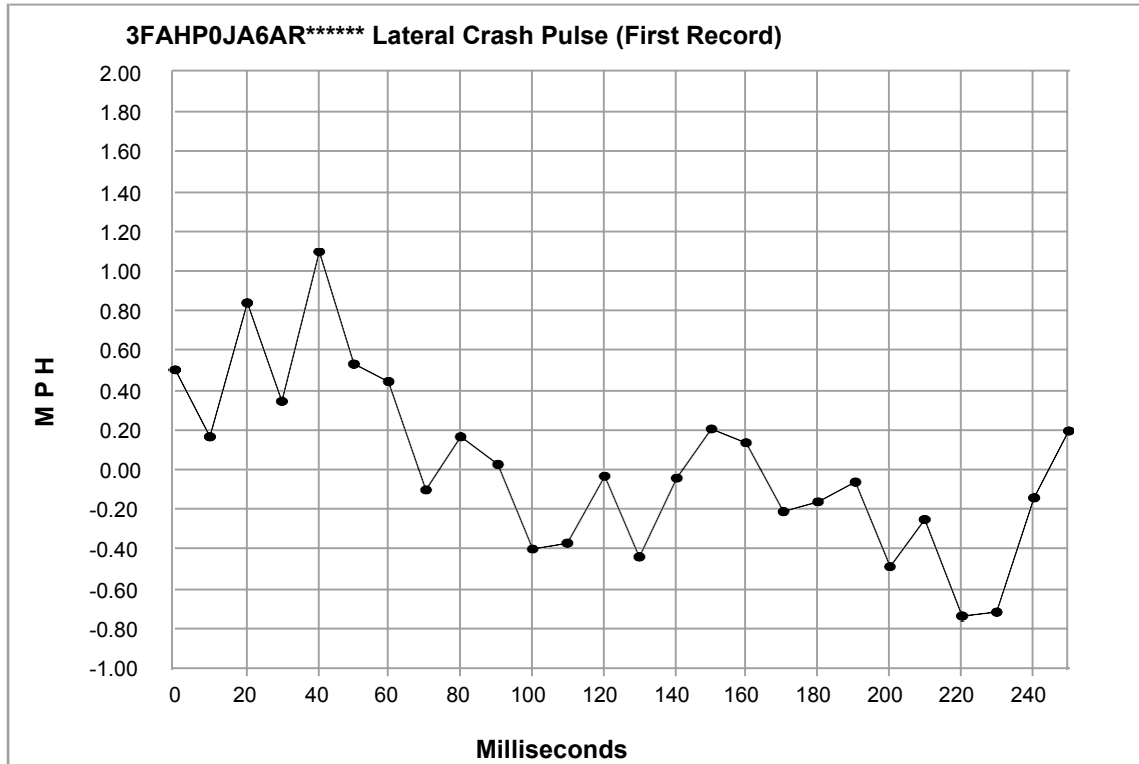
Pre-Crash Data -5 to 0 sec [10 samples/sec] (First Record)

Times (sec)	Steering Wheel Angle (degrees)	Stability Control Lateral Acceleration (g)	Stability Control Longitudinal Acceleration (g)	Stability Control Yaw Rate (deg/sec)
- 5.0	-4.6	-0.101	0.042	-1.12
- 4.9	-4.5	-0.089	0.023	-0.5
- 4.8	-4.1	-0.045	0.021	-1.12
- 4.7	-4.2	-0.038	-0.027	-0.25
- 4.6	-4.1	-0.06	-0.028	-0.75
- 4.5	-3.2	-0.077	-0.029	-0.75
- 4.4	-1.9	-0.062	-0.009	-1.0
- 4.3	-1.3	-0.031	0.018	-0.25
- 4.2	-1.6	-0.025	0.037	0.12
- 4.1	-1.7	-0.032	0.053	-0.25
- 4.0	-2.0	-0.01	0.024	-0.37
- 3.9	-2.1	-0.013	0.013	-0.62
- 3.8	-1.8	0.004	-0.031	-0.5
- 3.7	-1.6	-0.047	-0.024	-1.25
- 3.6	-1.5	-0.032	-0.03	-1.12
- 3.5	-1.3	-0.021	-0.003	-0.25
- 3.4	-1.3	0.024	0.004	-0.75
- 3.3	-1.1	-0.003	0.056	-0.62
- 3.2	-1.1	-0.019	0.048	-0.5
- 3.1	-1.1	-0.022	0.018	-0.75
- 3.0	-1.1	0.001	-0.003	-0.5
- 2.9	-1.1	-0.006	-0.002	-0.87
- 2.8	-1.1	-0.013	-0.014	-0.87
- 2.7	-1.1	-0.012	-0.043	-0.5
- 2.6	-1.1	-0.029	-0.028	-0.62
- 2.5	-1.0	-0.022	0.026	-0.5
- 2.4	-0.7	0.034	0.056	-0.62
- 2.3	-0.3	0.005	0.058	-1.0
- 2.2	-0.2	-0.007	-0.016	-0.25
- 2.1	-0.6	-0.052	-0.033	-1.25
- 2.0	-0.7	-0.03	0.018	-0.75
- 1.9	-0.6	0.035	-0.053	-0.25
- 1.8	-0.1	-0.022	-0.037	-0.5
- 1.7	-2.0	-0.036	-0.021	-0.62
- 1.6	-3.6	-0.02	-0.018	-1.62
- 1.5	-3.5	-0.044	0.031	-1.37
- 1.4	-3.7	-0.033	0.032	-1.37
- 1.3	-3.9	-0.034	0.013	-1.25
- 1.2	-3.0	-0.101	0.001	-1.12
- 1.1	-0.2	-0.078	-0.018	-0.5
- 1.0	5.0	0.076	-0.013	0.75
- 0.9	10.5	0.119	-0.003	2.12
- 0.8	11.6	0.188	0.004	2.87
- 0.7	9.7	0.21	0.046	2.87
- 0.6	9.4	0.237	0.025	1.62
- 0.5	11.0	0.189	0.033	1.75
- 0.4	16.0	0.268	0.0	1.87
- 0.3	24.0	0.163	0.073	5.25
- 0.2	23.9	-0.074	0.903	-4.12
- 0.1	6.9	0.5	-0.912	-7.0
0.0	30.1	0.168	-0.441	0.0



Longitudinal Crash Pulse (First Record)

Time (msec)	Delta-V, longitudinal (MPH)	Delta-V, longitudinal (km/h)
0	-0.78	-1.26
10	-2.82	-4.54
20	-3.44	-5.54
30	-6.41	-10.31
40	-6.87	-11.05
50	-7.94	-12.79
60	-8.14	-13.10
70	-9.51	-15.30
80	-10.14	-16.32
90	-11.08	-17.82
100	-11.56	-18.61
110	-12.60	-20.28
120	-12.85	-20.69
130	-13.40	-21.57
140	-14.75	-23.73
150	-14.88	-23.94
160	-15.40	-24.78
170	-16.19	-26.06
180	-17.10	-27.52
190	-17.54	-28.23
200	-18.15	-29.22
210	-18.98	-30.55
220	-19.53	-31.43
230	-20.23	-32.55
240	-20.99	-33.78
250	-21.78	-35.05



Lateral Crash Pulse (First Record)

Time (msec)	Delta-V, lateral (MPH)	Delta-V, lateral (km/h)
0	0.50	0.80
10	0.16	0.25
20	0.83	1.34
30	0.33	0.54
40	1.09	1.76
50	0.53	0.85
60	0.43	0.70
70	-0.11	-0.18
80	0.16	0.26
90	0.02	0.04
100	-0.40	-0.65
110	-0.38	-0.61
120	-0.04	-0.07
130	-0.44	-0.71
140	-0.05	-0.07
150	0.19	0.31
160	0.13	0.22
170	-0.22	-0.35
180	-0.16	-0.26
190	-0.07	-0.11
200	-0.50	-0.80
210	-0.25	-0.41
220	-0.75	-1.20
230	-0.72	-1.16
240	-0.15	-0.24
250	0.19	0.31

System Status at Event (Second Record)

Recording Status	Unlocked Record
Complete file recorded (yes,no)	Yes
Multi-event, number of events (1,2)	4
Time from event 1 to 2 (msec)	100
Lifetime Operating Timer at event time zero (seconds)	13,941,870
Key-on Timer at event time zero (seconds)	620
Vehicle voltage at time zero (Volts)	12.96
Energy Reserve Mode entered during event (Y/N)	No
Time Driver Front Satellite Sensor Lost Relative to Time Zero (msec)	Data lost prior to event
Time Passenger Front Satellite Sensor Lost Relative to Time Zero (msec)	Data lost prior to event

Faults Present at Start of Event (Second Record)

B0095-93
B1193-00

Deployment Data (Second Record)

Maximum delta-V, longitudinal (MPH [km/h])	1.82 [2.94]
Time, maximum delta-V longitudinal (msec)	130
Maximum delta-V, lateral (MPH [km/h])	-5.78 [-9.30]
Time, maximum delta-V lateral (msec)	130

Pre-Crash Data -1 sec (Second Record)

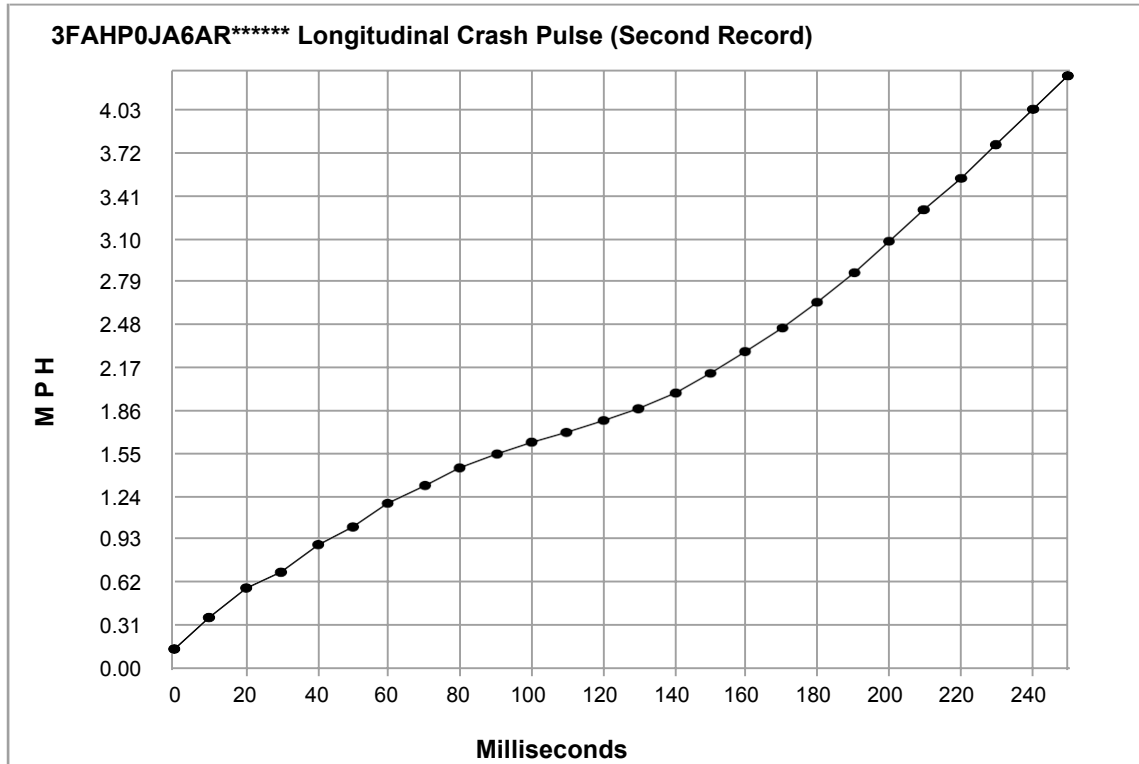
Ignition cycle, crash	13,959
Frontal air bag warning lamp, on/off	On
Occupant size classification, front passenger (Child size Yes/No [Hex value])	No [\$01]
Safety belt status, driver	Driver Buckled
Seat track position switch, foremost, status, driver	Not Forward
Safety belt status, front passenger	Passenger Not Buckled
Brake Telltale	On
ABS Telltale	On
Stability Control Telltale	On
Speed Control Telltale	Off
Powertrain Wrench Telltale	Off
Powertrain Malfunction Indicator Lamp (MIL) Telltale	Off

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

Times (sec)	Speed vehicle indicated MPH [km/h]	Accelerator pedal, % full	Service brake, on/off	Engine rpm	ABS activity (engaged, non-engaged)	Stability control (engaged, non-engaged)	Traction Control via Brakes (engaged, non-engaged)	Traction Control via Engine (engaged, non-engaged)
- 5.0	84.5 [136.0]	39	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 4.5	84.5 [136.0]	39	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 4.0	84.5 [136.0]	38	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 3.5	84.5 [136.0]	38	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 3.0	84.5 [136.0]	38	Off	3,500	non-engaged	non-engaged	non-engaged	non-engaged
- 2.5	84.5 [136.0]	38	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 2.0	84.5 [136.0]	38	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 1.5	84.5 [136.0]	33	Off	3,400	non-engaged	non-engaged	non-engaged	non-engaged
- 1.0	83.3 [134.0]	60	Off	3,000	engaged	engaged	non-engaged	non-engaged
- 0.5	57.8 [93.0]	54	On	2,200	engaged	engaged	non-engaged	non-engaged
0.0	57.8 [93.0]	54	On	2,200	non-engaged	non-engaged	non-engaged	non-engaged

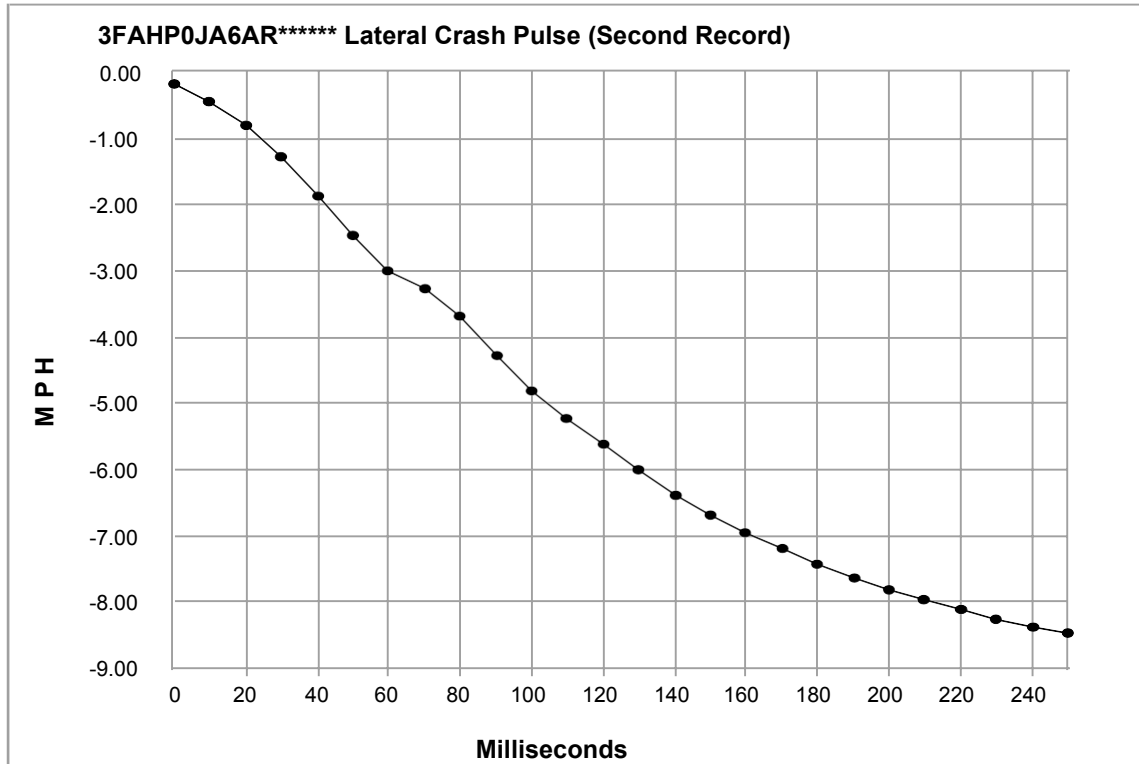
Pre-Crash Data -5 to 0 sec [10 samples/sec] (Second Record)

Times (sec)	Steering Wheel Angle (degrees)	Stability Control Lateral Acceleration (g)	Stability Control Longitudinal Acceleration (g)	Stability Control Yaw Rate (deg/sec)
- 5.0	-1.8	0.004	-0.031	-0.5
- 4.9	-1.6	-0.047	-0.024	-1.25
- 4.8	-1.5	-0.032	-0.03	-1.12
- 4.7	-1.3	-0.021	-0.003	-0.25
- 4.6	-1.3	0.024	0.004	-0.75
- 4.5	-1.1	-0.003	0.056	-0.62
- 4.4	-1.1	-0.019	0.048	-0.5
- 4.3	-1.1	-0.022	0.018	-0.75
- 4.2	-1.1	0.001	-0.003	-0.5
- 4.1	-1.1	-0.006	-0.002	-0.87
- 4.0	-1.1	-0.013	-0.014	-0.87
- 3.9	-1.1	-0.012	-0.043	-0.5
- 3.8	-1.1	-0.029	-0.028	-0.62
- 3.7	-1.0	-0.022	0.026	-0.5
- 3.6	-0.7	0.034	0.056	-0.62
- 3.5	-0.3	0.005	0.058	-1.0
- 3.4	-0.2	-0.007	-0.016	-0.25
- 3.3	-0.6	-0.052	-0.033	-1.25
- 3.2	-0.7	-0.03	0.018	-0.75
- 3.1	-0.6	0.035	-0.053	-0.25
- 3.0	-0.1	-0.022	-0.037	-0.5
- 2.9	-2.0	-0.036	-0.021	-0.62
- 2.8	-3.6	-0.02	-0.018	-1.62
- 2.7	-3.5	-0.044	0.031	-1.37
- 2.6	-3.7	-0.033	0.032	-1.37
- 2.5	-3.9	-0.034	0.013	-1.25
- 2.4	-3.0	-0.101	0.001	-1.12
- 2.3	-0.2	-0.078	-0.018	-0.5
- 2.2	5.0	0.076	-0.013	0.75
- 2.1	10.5	0.119	-0.003	2.12
- 2.0	11.6	0.188	0.004	2.87
- 1.9	9.7	0.21	0.046	2.87
- 1.8	9.4	0.237	0.025	1.62
- 1.7	11.0	0.189	0.033	1.75
- 1.6	16.0	0.268	0.0	1.87
- 1.5	24.0	0.163	0.073	5.25
- 1.4	23.9	-0.074	0.903	-4.12
- 1.3	6.9	0.5	-0.912	-7.0
- 1.2	30.1	0.168	-0.441	0.0
- 1.1	51.1	-2.0	-2.0	-29.87
- 1.0	Invalid	-0.101	-2.0	-27.5
- 0.9	Invalid	-1.259	-2.0	-22.12
- 0.8	Invalid	-2.0	-2.0	-94.62
- 0.7	Invalid	-2.0	-2.0	-163.87
- 0.6	Invalid	0.15	-0.431	-167.62
- 0.5	Invalid	-0.847	-0.392	-153.12
- 0.4	Invalid	-1.213	-0.359	-126.12
- 0.3	Invalid	-2.0	-0.674	-92.12
- 0.2	Invalid	-1.577	-0.935	-56.87
- 0.1	Invalid	-2.0	-0.06	2.87
0.0	Invalid	-1.158	0.414	3.25



Longitudinal Crash Pulse (Second Record)

Time (msec)	Delta-V, longitudinal (MPH)	Delta-V, longitudinal (km/h)
0	0.14	0.23
10	0.38	0.60
20	0.59	0.94
30	0.70	1.12
40	0.90	1.44
50	1.03	1.65
60	1.19	1.92
70	1.31	2.11
80	1.45	2.33
90	1.55	2.50
100	1.63	2.63
110	1.71	2.75
120	1.78	2.87
130	1.87	3.01
140	1.99	3.20
150	2.12	3.42
160	2.29	3.68
170	2.45	3.95
180	2.65	4.26
190	2.86	4.59
200	3.08	4.95
210	3.31	5.33
220	3.54	5.69
230	3.78	6.08
240	4.02	6.48
250	4.27	6.87



Lateral Crash Pulse (Second Record)

Time (msec)	Delta-V, lateral (MPH)	Delta-V, lateral (km/h)
0	-0.17	-0.27
10	-0.44	-0.71
20	-0.79	-1.28
30	-1.27	-2.05
40	-1.87	-3.01
50	-2.47	-3.98
60	-2.99	-4.81
70	-3.28	-5.28
80	-3.68	-5.92
90	-4.26	-6.86
100	-4.82	-7.76
110	-5.24	-8.43
120	-5.61	-9.02
130	-6.01	-9.67
140	-6.37	-10.26
150	-6.68	-10.75
160	-6.95	-11.18
170	-7.20	-11.59
180	-7.44	-11.97
190	-7.64	-12.30
200	-7.80	-12.56
210	-7.96	-12.80
220	-8.10	-13.04
230	-8.25	-13.27
240	-8.36	-13.46
250	-8.46	-13.62

Hexadecimal Data

Data that the vehicle manufacturer has specified for data retrieval is shown in the hexadecimal data section of the CDR report. The hexadecimal data section of the CDR report may contain data that is not translated by the CDR program. The control module contains additional data that is not retrievable by the CDR system.

02 00 00 00

39 45 35 33 2D 31 34 42 33 32 31 2D 42 4B 00 00 00 00 00 00 00 00 00 00

33 31 31 32 34 32 30 31 30 30 30 30 30 30 30

39 45 35 33 2D 31 34 43 30 32 38 2D 41 42 00 00 00 00 00 00 00 00 00 00

12 0F 85 EF 00 00 00 00 00 00 00 00 00 00 00 00

12 07 B3 39 00 00 00 00 00 00 00 00 00 00 00 00

12 06 F8 63 00 00 00 00 00 00 00 00 00 00 00 00

12 0F 6A B6 00 00 00 00 00 00 00 00 00 00 00 00

0C 57 D4 64 00 00 00 00 00 00 00 00 00 00 00 00

12 0F C2 11 00 00 00 00 00 00 00 00 00 00 00 00

33 46 41 48 50 30 4A 41 36 41 52 2A 2A 2A 2A 2A 2A

33 46 41 48 50 30 4A 41 36 41 52 2A 2A 2A 2A 2A 2A 00 00 00 00 00 00 00

3FAHP0JA6AR*****

Printed on: Wednesday, October 31 2018 at 13:40:53

FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF
FF FF

3FAHP0JA6AR*****

Printed on: Wednesday, October 31 2018 at 13:40:53

Printed on: Wednesday, October 31 2018 at 13:40:53

DOT HS 812 730
May 2019



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

