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Special Crash Investigations: On-Site Asymmetrical Front Air Bag Deployment Crash Investigation; Vehicle: 2017 Ford F-150 SuperCrew; Location: Mississippi; Crash Date: July 2020

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15. Supplementary Notes

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

16. Abstract

This report documents the investigation of the asymmetrical deployment of the frontal air bags in a 2017 Ford F-150 SuperCrew pickup truck. The Ford was driven by a belted 13-year-old female, with an unbelted 47-year-old male front right passenger, and a belted 13-year-old female second-row right passenger. The Ford was involved in a single-vehicle roadside departure crash while traveling south on a two-lane undivided roadway in a rural area at night. The Ford departed the right road edge after exiting a right curve, traversed along the sloped roadside, and then struck the upslope of a ditch bank and two trees before coming to final rest in the roadside. The crash resulted in the deployment of the passenger's frontal air bag; the driver's frontal air bag did not deploy. The belted driver and the belted second row right passenger of the Ford were transported by ambulance to a local hospital for the evaluation and treatment of police-reported possible (C-level) injuries. The unbelted right front passenger of the Ford rode in the ambulance but refused medical treatment at the hospital.

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On-Site Asymmetrical Front Air Bag Deployment Crash Investigation
Office of Defects Investigation
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Location: Mississippi
Crash Date: July 2020

Background

This report documents the investigation of the asymmetrical deployment of the frontal air bags in a 2017 Ford F-150 SuperCrew pickup truck (Figure 1). The Ford was driven by a belted 13-year-old female, with an unbelted 47-year-old male front right passenger, and a belted 13-year-old female second row right passenger. The Ford was involved in a single-vehicle roadside departure crash while traveling south on a two-lane undivided roadway in a rural area at night. The Ford departed the right road edge after exiting a right curve, traversed along the sloped roadside, and then struck the upslope of a ditch bank and two trees before coming to final rest in the roadside. The crash resulted in the deployment of the passenger's frontal air bag, but the driver's frontal air bag did not deploy. The belted driver and the belted second row right passenger of the Ford were transported by ambulance to a local hospital for the evaluation and treatment of police-reported possible (C-level) injuries. The unbelted right front passenger of the Ford rode in the ambulance but refused medical treatment at the hospital.

Figure 1. View of the deployed passenger's frontal air bag in the 2017 Ford F-150 (image provided by the salvage facility)

Notification of this crash was provided by the vehicle's owner to the National Highway Traffic Safety Administration. The crash was then assigned for an on-site investigation by the Special Crash Investigations (SCI) team at Crash Research & Analysis, Inc., in August 2020. The Ford was located at a regional insurance vehicle salvage facility, and cooperation was obtained from the vehicle's insurer to conduct an inspection of the vehicle. The on-site portion of this SCI investigation took place in August 2020. On-site activities included the exterior and interior

inspection of the Ford to measure crash deformation, interior damage and intrusion, document evidence of interior occupant contact, and examine the manual and supplemental restraint systems. The Event Data Recorder (EDR) component of the Ford's air bag control module (ACM) was imaged using the Bosch Crash Data Retrieval (CDR) tool and software. The crash site was documented with digital photographs and a total station mapping system. The front right passenger (owner) of the Ford was interviewed.

Crash Summary

Crash Site

The crash occurred on a rural two-lane state road at night. At the time of the crash, the National Weather Service reported a temperature of 24 °C (76 °F) and winds from the southeast at 14 km/h (9 mph). The police-reported weather conditions were cloudy with wet environmental surfaces from previous rain. In the vicinity of the crash site, the roadway consisted of a slight S-curve with a negative grade (less than 2%) that transitioned to a sag, near the impact location, followed by an uphill grade. Both travel lanes were 3 m (9.8 ft) wide and were separated by a painted double yellow centerline. The edges of the travel lanes were defined by painted white edge lines. The road surface, bituminous, was in worn but smooth condition. There were no stabilized shoulders. The speed limit was 89 km/h (55 mph). Both roadsides consisted of dirt covered with pine needles, and the west roadside had a negative 7.4 percent slope, measured perpendicular to the roadway, at the point of departure for the Ford. At the location of the sag and at the transition from the right to left curve, a drainage ditch on the west side roadside had eroded to a depth of approximately 2 m (7 ft). A dense tree line consisting of trees of large diameter bordered both roadsides. The tree line bordering the southbound lane was located approximately 6.5 m (21 ft) west of the roadway.

Pre-Crash

The Ford was driven by a 13-year-old unlicensed female with her 47-year-old father seated in the front right position and a 13-year-old female in the second row right position. The driver and the second row occupant were wearing the available seat belt systems, but the front right adult occupant was not belted. On approach to the crash site (Figure 2), the Ford had just exited a right curve and entered a straight section of roadway with a negative grade. The vehicle was traveling at an EDR-recorded speed of 56 km/h (34.6 mph) 5.0 seconds prior to algorithm enable (AE). Its speed continued to nominally increase due to the negative grade of the roadway over the pre-crash recording to a speed of 64 km/h (39.7 mph) at AE. The EDR also recorded steering wheel input. The data limitations indicated that the left steering had positive values. EDR data reported a right steering of -18.0 degrees at 5.0 seconds prior to AE as the Ford negotiated the right curve. The steering reduced to -5.8 degrees at 0.3 seconds prior to AE and then increased to -19.3 degrees at AE. The source of AE was determined to be the Ford's road departure. The increasing steering value at AE was probably caused by the irregular off-road terrain.

The Ford departed the right edge of the southbound lane in a tracking mode evidenced by rotating tire marks in the roadside as it entered the drainage ditch. The left tire mark measured 15.7 m (51.5 ft) long and the right was 25.6 m (84.0 ft) long. Both tire marks terminated at the edge of the eroded ditch.

Figure 2. South view, the Ford's travel path off west side of roadway

Figure 3. North view, lookback from tree impact, the arrow showing roadway departure/trajectory

Crash

The Ford vaulted the ditch, and its front plane and undercarriage struck the south ditch bank (Event 1, Figure 3), gouging the soft embankment. Dirt was embedded into the front bumper and the area between the bumper and the lower radiator support. The vehicle continued 4 m (13.1 ft) forward and struck the 30 cm (11.8 in) diameter tree with the front plane/center aspect (Event 2, Figure 4), resulting in a 12 o'clock direction of force impact. Due to the slope of the ditch bank and the slight pre-impact yaw, the Ford rotated approximately 15 degrees counterclockwise and rebounded from the tree impact (Figure 5). The lower aspect of the right cargo box, aft the rear axle, struck the small diameter tree (Event 3) as the Ford came to final rest engaged against the angled tree (see Figure 4).

Figure 4. South view, ditch bank impact (1) and tree impacts (2,3)

Figure 5. South view, police photo of the Ford at final rest, the arrow pointing to first tree impact

Post-Crash

The Ford came to rest with the right quarter panel engaged against the small diameter tree facing in a southerly direction. At final rest, the back plane was in the ditch with the undercarriage resting on top of the most westerly ditch bank. The right front passenger stated in the SCI interview that the first arriving officer assisted the driver and second row right occupant from the

vehicle through their doors. The front row right occupant exited under his own power through the right front door. All occupants sustained police-reported possible (C-level) injuries. The driver and the second row right passenger were transported by ambulance to a local hospital where they were treated and released. The right front passenger rode in the ambulance but refused treatment for his injuries.

2017 Ford F-150

Description

The Ford 4-door SuperCrew pickup truck had the Lariat trim level (Figure 6). The vehicle, manufactured in November 2016, was identified by the Vehicle Identification Number 1FTEW1EF8HKxxxxxx. At the time of the crash, the vehicle's odometer reading was 75,542 km (46,941 mi). Built on a 368 cm (144.9 in) wheelbase, the Ford was powered by a 5.0-liter, V-8, gasoline engine linked to a 6-speed automatic transmission with 4-wheel drive. The gross vehicle weight rating was 3,175 kg (7,000 lb) with gross axle weight ratings of 1,599 kg (3,525 lb) front and 1,724 (3,800 lb) rear. The Ford had vehicle manufacturer recommended size 275/55R20 tires mounted on OEM alloy wheels. The front tires were manufactured by Toyo, and the rear tires were Hankook brand. The vehicle manufacturer recommended tire pressure was 240 kPa (35 PSI) for both axles. Braking was achieved by power-assisted, 4-wheel disc brakes with ABS. Safety features included electronic stability control, a post-collision safety system, traction control, and a tire pressure monitoring system. Power steering was electric.

Figure 6. Frontal damage from the Event 2 tree impact with dirt embedded from the Event 1 impact

The interior was configured for seating of five occupants with front-row, leather-covered bucket seats and a second-row, leather-covered, spilt-bench seat with folding backs. All five positions had adjustable head restraints. The front row adjustable head restraints were set 2 cm (0.8 in) above the driver's seatback, and 5 cm (2.0 in) above right front seatback. The second row right head restraint was adjusted 3 cm (1.2 in) above the seatback. Safety systems consisted of manual 3-point lap and shoulder seat belts for the five positions. The continuous loop seat belt systems were equipped with lightweight locking latch plates for the front row and sliding latch plates for the second row. Supplemental restraint was provided by Certified Advanced 208-Compliant (CAC) driver's and passenger's frontal air bags, front seat-mounted side impact air bags, and dual-sensing (side impact and rollover) inflatable curtain (IC) air bags. Both front seat belt systems were equipped with retractor and lower anchor pretensioners. The passenger's frontal air bag deployed, and both driver's pretensioners actuated in this crash. Neither of the passenger's seat belt pretensioners actuated.

A vehicle history report stated that the Ford had only one owner. There was a history of a previous crash without air bag deployment. During his interview, the owner/right passenger

reported that the Ford only needed routine maintenance. The air bags were original equipment and did not require any service prior to the crash.

Exterior Damage

The Event 1 impact with the ditch bank resulted in minor damage to the front bumper that was masked by the subsequent Event 2 tree impact (Figure 7). Dirt was embedded in and between the bumper and the lower radiator support. The direction of force for this ditch bank impact was within the 12 o'clock sector. The Collision Deformation Classification (CDC) was 12FDLW99 (where 99 represents an unknown extent zone). The EDR did not record a delta V for this event.

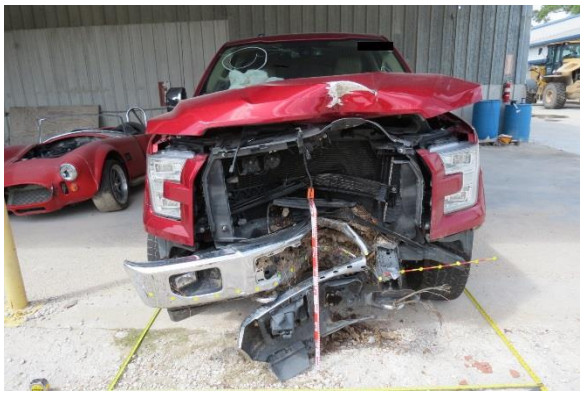


Figure 7. Frontal damage from the Event 2 tree impact with dirt embedded from the Event 1 impact

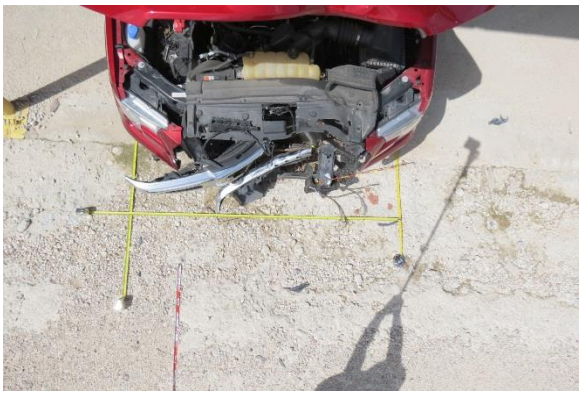


Figure 8. Overhead view showing the extent of frontal crush

The Ford continued forward, and the front plane struck the 30 cm (11.8 in) diameter tree (Event 2). The direct contact damage began 61 cm (24.0 in) right of the left bumper corner and extended 33 cm (13.0 in) to the right. The impact crushed the bumper to a maximum depth of 36 cm (14.2 in) located 92 cm (36.2 in) right of the right bumper corner. The Field L was 167 cm (65.7 in) and involved the full width of the end plane (Figure 8). Crush documents were documented on the front bumper beam, and the field L was 167 cm (65.7 in). The crush values were C1 = 0 cm, C2 = 0, C3 = 22 cm (8.7 in), C4 = 36 cm (14.2 in), C5 = 0 cm, and C6 = 0 cm (0 in). The CDC for this Event 2 impact was 12FCEN2. The damage algorithm of the WinSMASH program computed a longitudinal velocity change of -26 km/h (-16.2 mph) and a lateral component of 0 km/h. The collision fit the WinSMASH model, and the results appeared reasonable. The force of this impact most likely triggered the actuation/deployment of the Ford's safety systems, which were recorded by the EDR. The EDR did not record a delta V for this specific impact, as it occurred beyond the recording window of the module.

The lower right aspect of the cargo box struck the small diameter tree (Event 3, Figure 9) as the Ford rebounded from the Event 2 impact. The damage was located between the right rear wheel opening and the rear bumper and began 49 cm (19.3 in) aft of the axle location, extending 50 cm (19.7 in) rearward. A crush profile was documented and was as follows: C1 = 0 cm, C2 = 1 cm (0.4 in), C3 = 2 cm (0.8 in), C4 = 3 cm (1.2 in), C5 = 3 cm (1.2 in), and C6 = 2 cm (0.8 cm). A maximum crush value of 3 cm (1.2 in) was located 69 cm (27.2 in) aft of the rear axle. The CDC for this Event 3 damage was 05RBLS1. This minor impact was not recorded by the EDR.

Figure 9. Event 3 damage to the lower right aspect of the cargo box

NHTSA Recalls and Investigations

A VIN search of NHTSA's safercar.gov recall database identified two open recalls and no investigations for the involved 2017 Ford F-150. The service for these recalls was not completed. The first recall was identified by Manufacturer Recall No. 17S33 and NHTSA Recall No. 17V652, issued on October 16, 2017. This recall summary was as follows: "On your vehicle, a frozen door latch, or a bent or kinked door latch actuator cable may result in a door that will not open, will not close, or may open while driving."

The second recall was identified by Manufacturer Recall No. 18S27 and NHTSA Recall No. 18V568, issued on August 31, 2018. This recall summary was as follows: "If your vehicle is involved in a crash, deployment of the front seat belt pretensioner may cause a fire inside the driver or passenger side B-pillar trim (The outboard floor area next to the front seats) in the vehicle passenger compartment."

Event Data Recorder

The Ford had a restraint control module (RCM) that monitored and controlled the diagnostic, sensing, and deployment commands for the vehicle's supplemental safety systems. The RCM had EDR capabilities. The EDR component was imaged with version 19.5 of the Bosch Crash Data Retrieval software and is reported with version 21.2.1. Electrical power was supplied to the vehicle by an external battery, and the data were imaged via direct connection to the diagnostic link connector. The EDR reported a locked frontal event, and the event recording was complete. The EDR report is attached at the end of this report as Appendix A.

The EDR was capable of storing up to two crash events, termed either non-deployment or deployment events. Non-deployment events occur when the recording trigger threshold is met or exceeded [minimum of 8 km/h (5 mph)]. Data from non-deployments can be overwritten by subsequent events. Deployment events cannot be overwritten from the restraints control module (RCM). This RCM also categorizes non-air bag deployment events, when there is an event in

which non-air bag devices, such as pretensioners, have actuated. This type of event can be overwritten given a subsequent air bag deployment event.

Deployment Data (First Record)*:* This deployment event was recorded during the vehicle's front plane impact with the tree. The frontal air bag warning light was "off," and no trouble codes were reported. The driver's seat belt status was "buckled" while the right front passenger's was "unbuckled." Both front seat tracks were reported as "not forward." The record reported that the time to deploy the first and second stages of the passenger's frontal air bag were 1,723.5 msec and 1,873.5 msec after AE. The driver's retractor and anchor pretensioner actuation times were 1,723.5 msec and 1,728.5 msec. A time/distance analysis in the crash reconstruction determined that the long air bag deployment time (1.7235 seconds) was consistent with the vehicle dynamics at the road departure as the source of algorithm enable. The longitudinal velocity change reported by the EDR was -0.55 km/h (-0.34 mph) that occurred at 292 msec after AE. This small velocity change correlated to the initial portion of the vehicle's off-road trajectory. It did not represent the velocity change of the embankment and/or tree impact. The time of this impact (1.7+ sec) exceeded the recording capabilities/threshold of the EDR (250-300 msec).

Asymmetrical Air Bag Deployment

During the crash sequence, the Ford's RCM recognized that two people occupied the front row of the Ford. The driver was belted, and the front passenger was unbelted. Both front seats were in a rearward track position. The RCM sensed the road departure, and the vehicle's crash algorithms were enabled. The crash algorithms continued to run and monitor the Ford's accelerations as it traversed the roadside. Then the RCM recognized that the crash pulse accelerations generated by the front plane impact with embankment and/or tree were sufficient to require supplemental protection for the front row occupants. Therefore, the driver's seat belt pretensioners actuated, and the unbelted passenger's frontal air bag deployed.

Interior Damage

The interior of the Ford remained intact, and there was no intrusion. All four doors remained closed and were operational post-crash. The front door glazing was laminated, and all door glazings were closed at the time of the crash and undamaged. The laminated windshield was fractured at two locations adjacent to the right A-pillar, another fracture from contact by the front right air bag module cover, and a fourth star-like fracture to the right of the rearview mirror. These fractures appeared to be related to the passenger's air bag deployment, none of these fractures appeared to be associated with occupant contact. The AS3 tempered backlight glazing was disintegrated. Physical evidence of occupant contact was limited to a possible driver hand/arm scuff mark to the right lower spoke of the steering wheel rim. There was no steering wheel rim deformation or compression of the steering column.

Manual Restraint Systems

The Ford had manual 3-point lap and shoulder seat belt systems for the five designated seat positions. The front row seat belts consisted of lightweight locking latch plates on continuous loop webbing with adjustable D-rings. Both D-rings were adjusted to the full-down positions. The driver's seat belt system retracted onto an emergency locking retractor (ELR) while the front right position used a switchable ELR/automatic locking retractor (ALR). Both were configured with lower anchor and retractor pretensioners with buckle switches. The driver's webbing was

locked in an extended position at inspection. Both pretensioners had actuated. The driver was using her seat belt at the time of the crash; however, there was no loading evidence on the belt system. The front right seat belt was stowed on the retractor and operational. The right pretensioners were not actuated. The passenger was not belted at the time of the crash. The observations of seat belt use/non-use were in agreement with the data recorded by the EDR.

The second row consisted of continuous loop webbing with sliding latch plates. The three second row systems were configured with ALR/ELR retractors. The second row right passenger was restrained by her seat belt. There was no loading evidence on the seat belt system to support usage; however, the lack of occupant contact evidence justified seat belt usage.

Supplemental Restraint Systems

The Ford had a CAC frontal air bag system that consisted of dual stage driver's and passenger's frontal air bags, seat track positioning sensors, seat belt buckle switches, and an occupant classification sensor in the front right seat cushion. The system was controlled by the RCM that had EDR capabilities. In addition to the frontal air bags, the Ford was equipped with front seat-mounted side impact air bags and dual-sensing (side impact and roll sensing) IC air bags. The front row seat belt systems were equipped with lower anchor (Figure 10) and retractor pretensioners. In this crash, both driver's pretensioners actuated, and the passenger's frontal air bag deployed.

The driver's frontal air bag was concealed in the module mounted in the hub and in the four spokes of the steering wheel. Due to crash severity and driver seat belt use, it appears that the RCM logic was to actuate the pretensioners and not deploy the driver's frontal air bag.

Figure 10. Actuated driver's lower anchor pretensioner

Figure 11. Passenger's frontal air bag

The passenger's frontal air bag (Figure 11) deployed through a single, forward-hinged module cover in the top right aspect of the instrument panel. The module cover was 13 cm (5.1 in) in depth and 30 cm (11.8 in) in width. The deployed front right air bag measured 50 cm (19.7 in) in width and 60 cm (23.6 in) in height in its deflated state. There was no contact evidence or damage to the deployed air bag. The front right occupant was unbelted; therefore, the RCM deployed a Stage-1 air bag to provide restraint to the unbelted occupant. Stage 2 deployed as a disposal.

2017 Ford F-150 Occupant

Driver Demographics

Age/sex:	13 years/female
Height:	170 cm (67 in)
Weight:	64 kg (140 lb)
Eyewear:	None
Seat type:	Forward-facing power adjustable bucket seat
Seat track position:	Mid-track
Manual restraint usage:	3-point lap and shoulder seat belt
Usage source:	Vehicle inspection, EDR report
Air bags:	Frontal, seat-mounted side impact and IC air bags; none deployed
Alcohol/drug data:	None
Egress from vehicle:	Exited with some assistance
Transport from scene:	Ambulance to a local hospital
Type of medical treatment:	Treated and released

Driver Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Contusion to right elbow	710402.1	Isolated Interior – Center console first row	Possible

Source: emergency room records.

Driver Kinematics

The 13-year-old female driver of the Ford F-150 was seated in a mid-track position, with the seatback in a normal recline and the head restraint adjusted 2 cm (0.8 in) above the seatback. She was using the manual 3-point lap and shoulder seat belt system evidenced by vehicle inspection, EDR data, and the actuation of the pretensioners. There was no loading evidence on the seat belt system. The D-ring was adjusted to the lowest position.

As the vehicle departed the right roadside, it traversed the roadside in a tracking mode. The vehicle's chassis oscillated side-to-side due to the irregularity of the ditch bank. This likely triggered AE in the EDR. The Ford struck the tree (Event 2) with the front plane center aspect. This event actuated the driver's retractor and lower anchor pretensioners. The driver loaded the seat belt system that prevented her from contact with interior components. Her head flexed forward as her torso engaged the taut belt webbing due to the locking of the inertia retractor and pretensioner actuation. During the crash or rebound, it is possible that the driver's right elbow contacted the center console, causing a contusion.

Following the crash, she unbuckled her seat belt and was assisted from the vehicle and transported by ambulance to the emergency room of a local hospital, where she was evaluated for injury and released.

Front Row Right Passenger

Age/sex:	47 years/male
Height:	183 cm (72 in)
Weight:	102 kg (225 lb)
Eyewear:	None
Seat type:	Forward-facing power adjustable bucket seat
Seat track position:	Rear third
Manual restraint usage:	None
Usage source:	Vehicle inspection, EDR report
Air bags:	Frontal, seat-mounted side impact and IC air bags; frontal deployed
Alcohol/drug data:	Unknown
Egress from vehicle:	Exited under own power
Transport from scene:	Ambulance to a local hospital
Type of medical treatment:	Refused treatment

Front Row Right Passenger Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	3 cm (1 in) laceration to top of scalp	110602.1	Unknown	Unknown

Source: occupant interview.

Front Row Right Passenger Kinematics

The front right adult male occupant of the Ford was seated in a rear third seat track position. He was not restrained by the manual seat belt system. The lack of belt usage was determined from the vehicle inspection, with EDR status as “unbuckled” and the non-actuation of the front right pretensioners.

As the vehicle departed the roadway and traversed the ditch bank, this unbelted occupant was probably minimally displaced from his pre-crash seat position. As a result of the impact with the tree, the passenger’s frontal air bag deployed. The right front passenger translated forward and engaged the deployed Stage 1 air bag. There were no visible occupant contact points in his seated position. During the SCI interview, this occupant complained of a 3 cm (1 in) scalp laceration from an unknown source. He also complained of rib pain from possible air bag loading and neck and back pain from possible impact forces. His right knee possibly contacted the lower instrument panel/glove box, resulting in pain over the knee. Following the crash, he rode in the ambulance that was transporting the other two occupants to a local hospital. He refused medical treatment.

Second Row Right Passenger

Age/sex:	13 years/female
Height:	170 cm (67 in)
Weight:	68 kg (150 lb)
Eyewear:	None
Seat type:	Split bench with folding back
Seat track position:	Fixed
Manual restraint usage:	3-point lap and shoulder seat belt
Usage source:	Vehicle inspection
Air bags:	IC air bag; not deployed
Alcohol/drug data:	Unknown
Egress from vehicle:	Exited with some assistance
Transport from scene:	Ambulance to a local hospital
Type of medical treatment:	Treated and released

Second Row Right Passenger Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	None	N/A	N/A	N/A

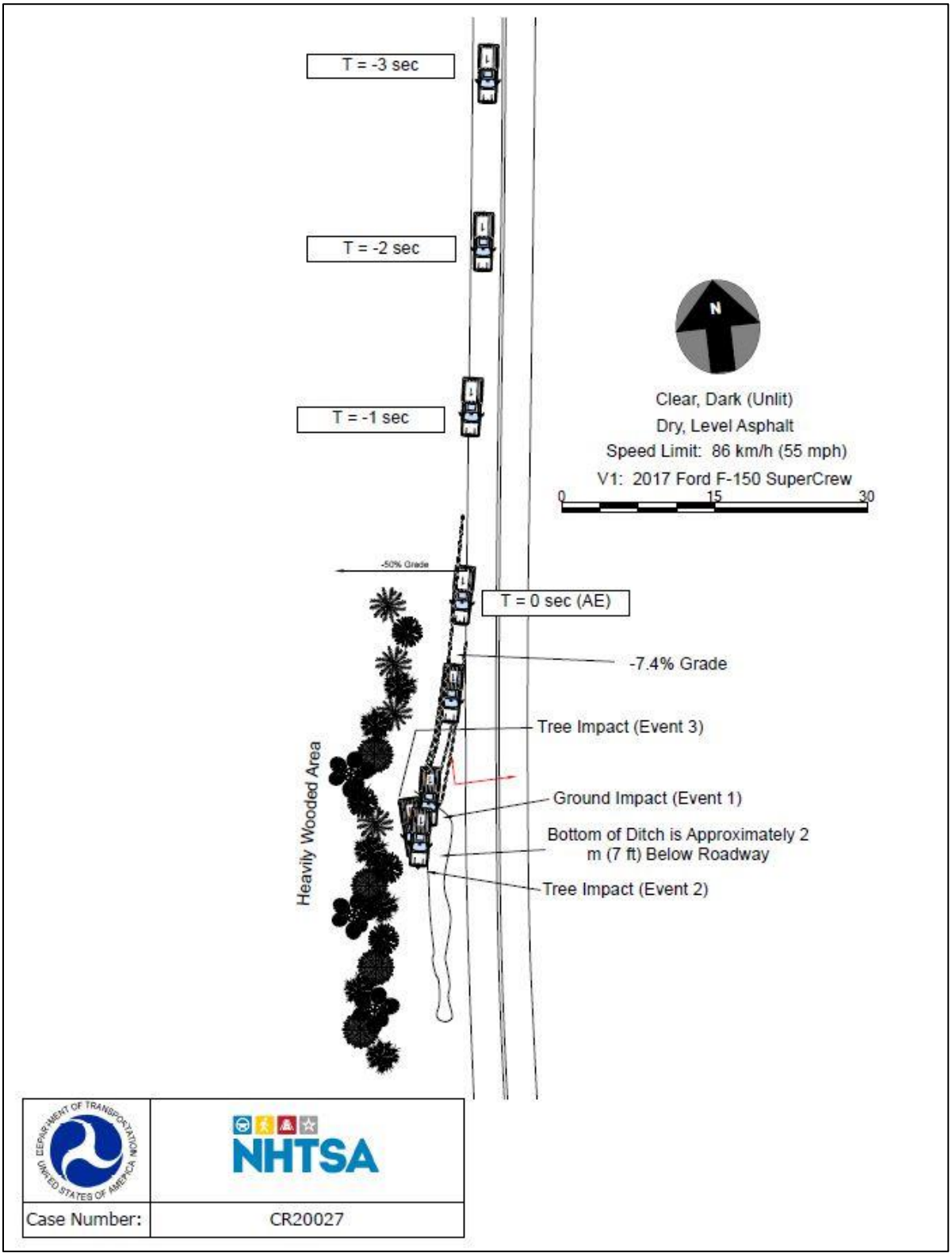
Source: front right occupant interview.

Second Row Right Passenger Kinematics

This second row right female occupant was seated on the forward-facing, split-bench seat with the head restraint adjusted 3 cm (1.2 in) above the seatback. She was restrained by the lap and shoulder seat belt system. There was no loading evidence on the belt system to support usage; however, there was no occupant contact in her immediate vicinity of the interior. The lack of occupant contact supported seat belt usage.

She was probably minimally displaced due to the off-road trajectory of the Ford prior to impact with the tree. At impact with the tree (Event 2), she would have initiated a forward trajectory in response to the 12 o'clock direction of force. This occupant would have loaded the manual seat belt system that held her in position and protected her from contact with interior components. Her loading against the seat belt system resulted in neck and back pain. Following the crash, the second row right occupant was assisted from the vehicle by the investigating police officer. She was transported by ambulance to the emergency room of a local hospital where she was treated and released.

Crash Diagram



Appendix A: Event Data Recorder Report for 2017 Ford F-150[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	1FTEW1EF8H2******
User	
Case Number	
EDR Data Imaging Date	09/01/2020
Crash Date	
Filename	CR20027_V1_ACM.CDRX
Saved on	Tuesday, September 1 2020 at 14:24:53
Imaged with CDR version	Crash Data Retrieval Tool 19.5
Imaged with Software Licensed to (Company Name)	NHTSA
Reported with CDR version	Crash Data Retrieval Tool 21.2.1
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
ACM Adapter Detected During Download	No
Event(s) recovered	locked frontal 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 Tuesday, September 1 2020 at 14:24:53.

Data Limitations

Data Imaging:

CAUTION: When imaging data directly from the RCM on a bench top, make sure the RCM is placed on a flat surface without any movement (static) while connected to and powered by the CDR interface. Not following the above guideline for bench top imaging could risk inducing new events to be recorded in the RCM and possibly overwriting a Non airbag deployment.

Note that the RCM Adapter Detected during Download parameter equal to " Yes" indicates that the EDR data was collected directly from the RCM. When equal to "No", it indicates that the EDR data was collected through the OBD II from the vehicle.

Restraints Control Module (RCM) Recorded Crash Event(s):

The RCM can store up to two crash events. Event types are categorized as follow:

1. Non deployment trigger event is an event in which EDR recording trigger threshold is met or exceeded (minimum of 5 mph (8kph) Accumulated Delta Velocity within 150ms interval), but no device(s) have deployed. The data from such event can be overwritten by subsequent events.

2. Airbag deployment event is an event in which frontal, side or curtain airbags have deployed. Note that such event cannot be overwritten or cleared from the Restraints Control Module (RCM). Once the RCM has deployed any airbag device(s), the RCM must be replaced.

3. Some RCM may also categorize Non airbag deployment event. This type is an event in which non airbag devices such as pretentioners, knee bolster etc… have deployed. Note that such event can be overwritten given a subsequent "deployment" event.

"Time zero" or Event Beginning of any event (First Record or Second Record) is defined as the first Algorithm wake up during that event. So all the Pre-Crash, At Event, Delta V Data, deployment times etc… are relative to "Time zero".

It is possible that conditions in a crash may result in an incomplete event data record.

EDR Data Elements Overview/Interpretation in CDR Report:

Under CDR File Information Section

- Event(s) recovered indicates if an event was detected and recorded by RCM. If no event is detected, it will indicate "none". If a trigger or non airbag deployment event is detected, it will indicate "unlocked event". If an airbag deployment is detected, it will indicate "locked frontal event", or "locked side event", or "locked rollover event".

Under System Status at Event Section

- Complete file recorded indicates if data from the recorded event has been fully written to the RCM memory.
- If the RCM detected a peripheral crash sensor was lost during an event, the crash sensor would be identified as well as the time it was lost during that event relative to Time zero. If no loss of a peripheral crash sensor, nothing would be displayed. Note in some vehicles, loss of a peripheral crash sensor may lead to the loss of another peripheral crash sensor due to shared communication.

Under Deployment Data Section

- If the RCM commanded a deployment during an event, the deployment device(s) would be identified as well as the time the RCM commanded its deployment relative to Time zero. If no device was commanded to deploy by the RCM, nothing (no deployment device (s)) would be displayed.

Under Pre-Crash Data -5 to 0 sec

- Steering Wheel Angle if Applicable: positive value indicates left turn, and negative value would indicate right turn.
- Stability Control Lateral Acceleration if Applicable: Lateral Acceleration (Y-direction) is the acceleration along the lateral axis of the vehicle, reported as positive when accelerating to the left.
- Stability Control Longitudinal Acceleration if Applicable**:** Longitudinal Acceleration (X-direction) is the acceleration along the longitudinal axis of the vehicle, reported as positive when accelerating in a forward direction.
- Stability Control Yaw Rate if Applicable: The Yaw Axis is the vertical axis of the vehicle, generally perpendicular to the plane of the road. A positive Yaw Rate is counter-clockwise when observing the vehicle from above.
- Stability Control Roll Rate if Applicable: The Roll Axis is the longitudinal axis of the vehicle, generally aligned with the primary axis of motion of the vehicle. A positive Roll Rate is counter-clockwise when observing the vehicle from the front.

Under Longitudinal Crash Pulse

- Delta-V, longitudinal: SAE J211 sign convention, negative value generally indicates a front crash and positive value generally indicates a rear crash. Longitudinal delta-V reflects the change in forward velocity that the sensing system experienced from Time zero. It is not the speed the vehicle was traveling before the event. Note that the vehicle speed is recorded separately. This data should be examined in conjunction with other available physical evidence from the vehicle and scene when assessing occupant or vehicle longitudinal delta-V.

Under Lateral Crash Pulse

- Delta-V, lateral: SAE J211 sign convention, Positive value generally indicates a driver side crash and negative value generally indicates a passenger side crash.

Under Rollover Sensor Data (if Applicable)

- Vehicle roll angle if applicable: The Roll Axis is the longitudinal axis of the vehicle, generally aligned with the primary axis of motion of the vehicle. A positive Roll Angle is counter-clockwise when observing the vehicle from the front.

Data Sources:

The Restraints Control Module (RCM) contains all recorded data on any event. Data collected from the RCM comes from multiple sources:

1. Internal to the RCM such as internal sensors for delta Velocity data, rollover angle data if applicable, etc… which are measured, calculated and stored internally.

2. External to the RCM but with a direct connection such as buckle switches, peripheral crash sensors, seat track switch(s) etc… which are measured, calculated and stored internally.

3. External Modules to the RCM such as Powertrain Control Module, Brake Control Module, etc… Theses modules communicate to the RCM via Vehicle Communication Network. The RCM stores the received data internally.

02013_RCM-RC7P_r001

System Status at Time of Retrieval

VIN As Programmed into RCM at Factory	1FTEW1EF8HK******
Current VIN (From PCM)	1FTEW1EF8HK******
Ignition Cycle, Download (First Record)	9,094
Ignition Cycle, Download (Second Record)	N/A
Restraints Control Module Part Number	HL3T-14B321-AC
Restraints Control Module Serial Number	3010938137300000
Restraints Control Module Software Part Number (Version)	GR3T-14C028-AA
Driver Side/Center Frontal Restraints Sensor Serial Number	000229DF
Driver, Row 1, Side Restraint Sensor 1 Serial Number	000000A7
Driver, Row 2, Side Restraint Sensor 2 Serial Number	000429DB
Passenger Frontal Restraints Sensor Serial Number	000229DF
Passenger, Row 1, Side Restraint Sensor 1 Serial Number	00000004
Passenger, Row 2, Side Restraint Sensor 2 Serial Number	000229DE
Steering Wheel Location	Left Hand Drive

System Status at Event (First Record)

Complete File Recorded (Yes,No)	Yes
Multi-Event, Number of Events	1
Time From Event 1 to 2 (msec)	0
Lifetime Operating Timer at Event Time Zero (sec)	8,797,850
Key-On Timer at Event Time Zero (sec)	7,250
Vehicle Voltage at Time Zero (V)	14.4
Energy Reserve Mode Entered During Event (Yes, No)	No

Faults Present at Start of Event (First Record)

No Faults Recorded

Deployment Data (First Record)

Frontal Airbag Deployment, Time to First Stage Deployment, Front Passenger (msec)	1,723.5
Pretensioner (Retractor) Deployment, Time to Fire, Driver (msec)	1,723.5
Frontal Airbag Deployment, Time to 2nd Stage, Front Passenger (msec)	1,873.5
Pretensioner (Anchor) Deployment, Time to Fire, Driver (msec)	1,728.5
Canister Vent Deployment, Time to Fire, Passenger (msec)	1,948.5
Maximum Delta-V, Longitudinal (MPH [km/h])	-0.34 [-0.55]
Time, Maximum Delta-V Longitudinal (msec)	292.0
Driver or center, front satellite sensor, Safing Deployment	Yes
Passenger, front satellite sensor, Discriminating Deployment	Yes
Passenger, front satellite sensor, Safing Deployment	Yes
RCM front(longitudinal), Discriminating Deployment	Yes
RCM front(longitudinal), Safing Deployment	Yes

Pre-Crash Data -1 sec (First Record)

Ignition cycle, Crash	9,078
Frontal Air Bag Warning Lamp, On/Off	Off
Safety Belt Status, Driver	Buckled
Seat Track Position Switch, Foremost, Status, Driver	Not Forward
Seat Track Position Switch, Foremost, Status, Front Passenger	Not Forward
Safety Belt Status, Front Passenger	Unbuckled
Brake Telltale	Off
ABS Telltale	Off
ESC/TC Telltale	Off
ESC/TC Off Telltale	Default Mode
Powertrain Wrench Telltale	Off
Powertrain Malfunction Indicator Lamp (MIL) Telltale	Off
Global Real Time (seconds)	116,036,346.9

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

Time (sec)	Speed, Vehicle Indicated (MPH [km/h])	Speed, Vehicle Indicated, Quality Factor	Accelerator Pedal, % Full	Accelerator Pedal, % Full, Quality Factor	Service Brake, On/Off	Service brake, Quality Factor	Engine RPM	ABS Activity (Engaged, Non-Engaged)
- 5.0	34.6 [56]	OK	3.1	OK	Off	OK	1,140	Non-engaged
- 4.5	34.6 [56]	OK	12.5	OK	Off	OK	1,294	Non-engaged
- 4.0	34.8 [56]	OK	15.7	OK	Off	OK	1,228	Non-engaged
- 3.5	35.3 [57]	OK	21.8	OK	Off	OK	1,250	Non-engaged
- 3.0	36.0 [58]	OK	21.8	OK	Off	OK	1,244	Non-engaged
- 2.5	36.7 [59]	OK	21.8	OK	Off	OK	1,288	Non-engaged
- 2.0	37.4 [60]	OK	21.8	OK	Off	OK	1,298	Non-engaged
- 1.5	38.1 [61]	OK	20.8	OK	Off	OK	1,290	Non-engaged
- 1.0	38.9 [63]	OK	18.4	OK	Off	OK	1,314	Non-engaged
- 0.5	39.4 [63]	OK	16.8	OK	Off	OK	1,326	Non-engaged
0.0	39.7 [64]	OK	15.8	OK	Off	OK	1,334	Non-engaged

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

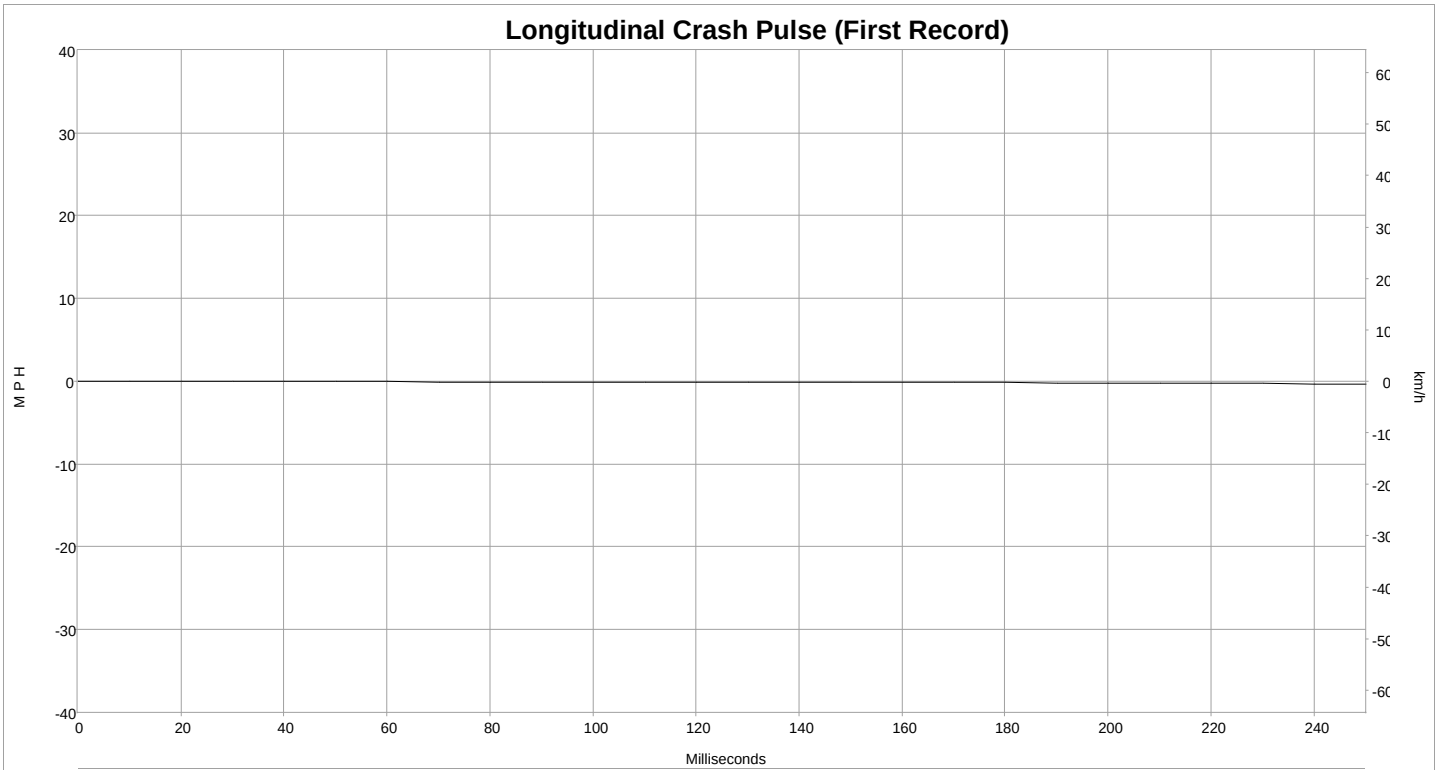
Time (sec)	Brake Powertrain Torque Request 1	Brake Powertrain Torque Request 2	Traction Control via Brakes	Wheel Torque (N-m)	Speed Control Status	Driver Gear Selection (Auto Trans)	Occupant Size Classification, Front Passenger (Child size Yes/No [Hex value])
- 5.0	No	No	No	-204	Off	Drive	No [$08]
- 4.5	No	No	No	328	Off	Drive	No [$08]
- 4.0	No	No	No	560	Off	Drive	No [$08]
- 3.5	No	No	No	740	Off	Drive	No [$08]
- 3.0	No	No	No	892	Off	Drive	No [$08]
- 2.5	No	No	No	896	Off	Drive	No [$08]
- 2.0	No	No	No	892	Off	Drive	No [$08]
- 1.5	No	No	No	872	Off	Drive	No [$08]
- 1.0	No	No	No	776	Off	Drive	No [$08]
- 0.5	No	No	No	716	Off	Drive	No [$08]
0.0	No	No	No	668	Off	Drive	No [$08]

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

Time (sec)	Stability Control Lateral Acceleration (g)	Stability Control Longitudinal Acceleration (g)	Stability Control Yaw Rate (deg/sec)	Stability Control Roll Rate (deg/sec)	Steering Wheel Angle (deg)
- 5.0	-0.07	-0.06	-3.06	2.27	-18.0
- 4.9	-0.06	-0.04	-2.68	0.84	-14.3
- 4.8	-0.04	-0.04	-2.45	-0.19	-12.4
- 4.7	-0.06	-0.04	-2.64	0.55	-12.0
- 4.6	-0.08	-0.02	-2.48	-0.84	-12.5
- 4.5	-0.08	0.00	-2.27	-2.72	-13.7
- 4.4	-0.07	-0.01	-2.36	-1.48	-15.3
- 4.3	-0.07	0.00	-2.99	-2.12	-15.8
- 4.2	-0.11	0.01	-3.04	-1.51	-15.7
- 4.1	-0.10	0.01	-2.75	0.87	-14.9
- 4.0	-0.10	0.01	-2.64	0.55	-13.7
- 3.9	-0.07	0.01	-2.04	0.44	-12.5
- 3.8	-0.06	0.02	-1.88	1.59	-11.0
- 3.7	-0.06	0.02	-1.88	2.04	-9.4
- 3.6	-0.06	0.02	-1.76	1.88	-7.7
- 3.5	-0.05	0.02	-1.23	1.24	-6.6
- 3.4	-0.04	0.04	-0.86	2.96	-6.3
- 3.3	-0.02	0.04	-1.23	1.08	-5.8
- 3.2	-0.02	0.04	-1.18	-1.99	-5.8
- 3.1	-0.01	0.04	-1.16	-0.60	-5.8
- 3.0	-0.04	0.02	-1.49	1.24	-5.7
- 2.9	-0.05	0.03	-1.29	-0.19	-5.5
- 2.8	-0.02	0.04	-0.52	-2.20	-5.3
- 2.7	0.01	0.03	-0.54	-1.88	-5.0
- 2.6	-0.02	0.02	-1.09	1.51	-4.9
- 2.5	-0.05	0.03	-1.51	0.52	-4.4
- 2.4	-0.06	0.05	-0.63	-0.19	-4.1
- 2.3	-0.03	0.04	-0.38	1.64	-4.0
- 2.2	-0.04	0.04	-0.84	4.27	-4.0
- 2.1	-0.04	0.04	-1.27	3.04	-4.0
- 2.0	-0.01	0.03	-0.63	-1.03	-3.9
- 1.9	0.01	0.04	-0.22	-0.07	-4.1
- 1.8	0.00	0.04	-1.20	2.15	-4.1
- 1.7	-0.05	0.05	-1.38	4.55	-4.1
- 1.6	-0.06	0.06	-1.20	4.68	-4.1
- 1.5	0.00	0.04	-0.22	1.56	-4.1
- 1.4	0.03	0.03	0.15	1.83	-4.3
- 1.3	0.04	0.04	-1.27	-1.24	-4.4
- 1.2	-0.01	0.04	-1.93	-2.31	-4.8
- 1.1	-0.02	0.03	-1.11	-5.72	-5.3
- 1.0	-0.01	0.03	-0.45	-1.88	-5.8
- 0.9	-0.02	0.02	-0.72	2.99	-5.8
- 0.8	-0.06	0.03	-1.47	4.63	-5.3
- 0.7	0.00	0.03	-0.91	2.35	-4.9
- 0.6	0.02	0.04	0.31	-2.67	-4.9
- 0.5	0.05	-0.02	-0.49	-4.11	-4.9
- 0.4	-0.02	0.02	-1.86	0.71	-5.3
- 0.3	-0.06	-0.02	-0.88	18.04	-5.8
- 0.2	-0.29	-0.05	-0.72	16.19	-9.6
- 0.1	-0.09	-0.02	-1.11	10.36	-13.9
0.0	0.06	-0.05	-2.70	19.16	-19.3

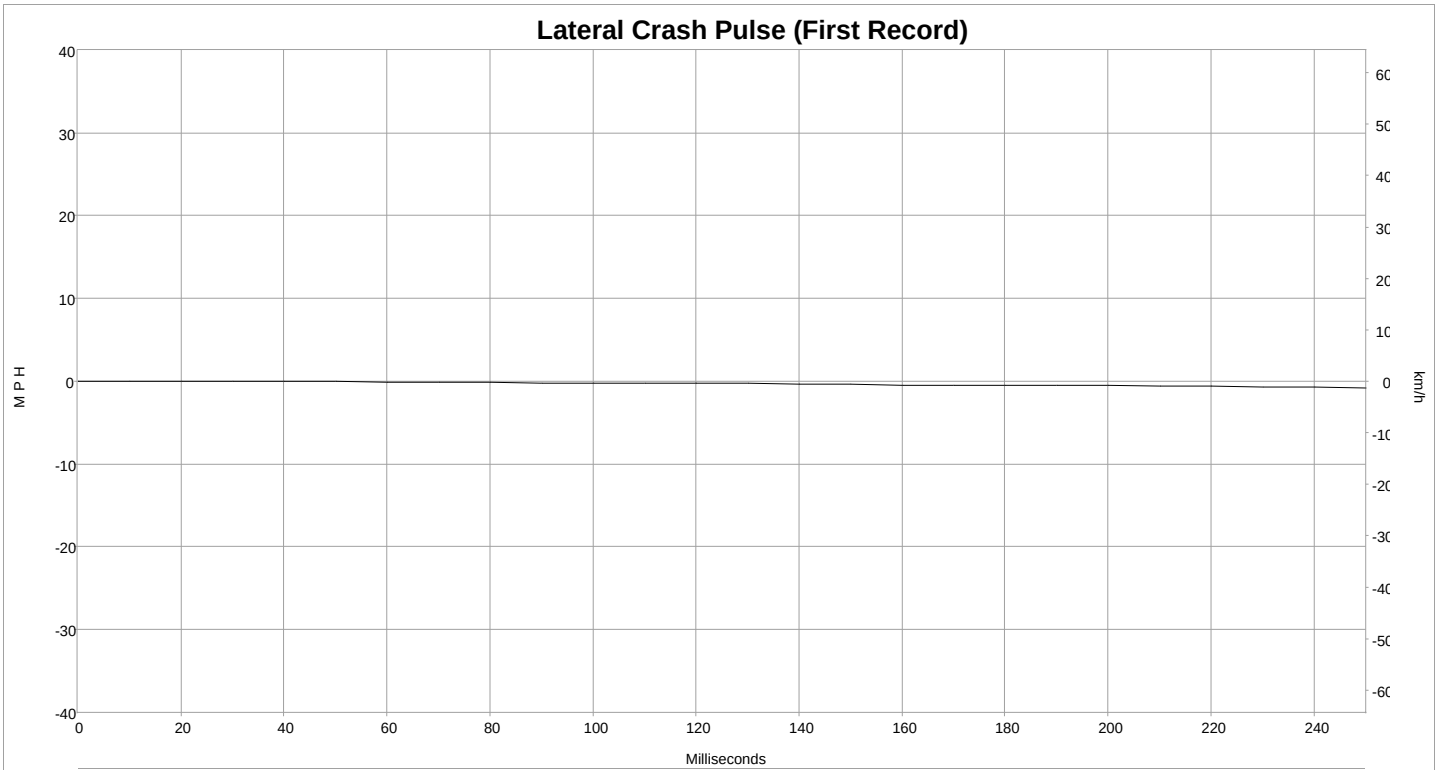
Post-Crash Data 0 to 5 sec [4 samples/sec] (First Record)

Time (sec)	Impact Event Feedback Status
0.00	Normal
0.25	Normal
0.50	Normal
0.75	Normal
1.00	Normal
1.25	Normal
1.50	Normal
1.75	EventInProgress
2.00	EventInProgress
2.25	EventInProgress
2.50	EventInProgress
2.75	EventInProgress
3.00	EventInProgress
3.25	EventInProgress
3.50	EventInProgress
3.75	EventInProgress
4.00	EventInProgress
4.25	EventInProgress
4.50	EventInProgress
4.75	EventInProgress
5.00	EventInProgress



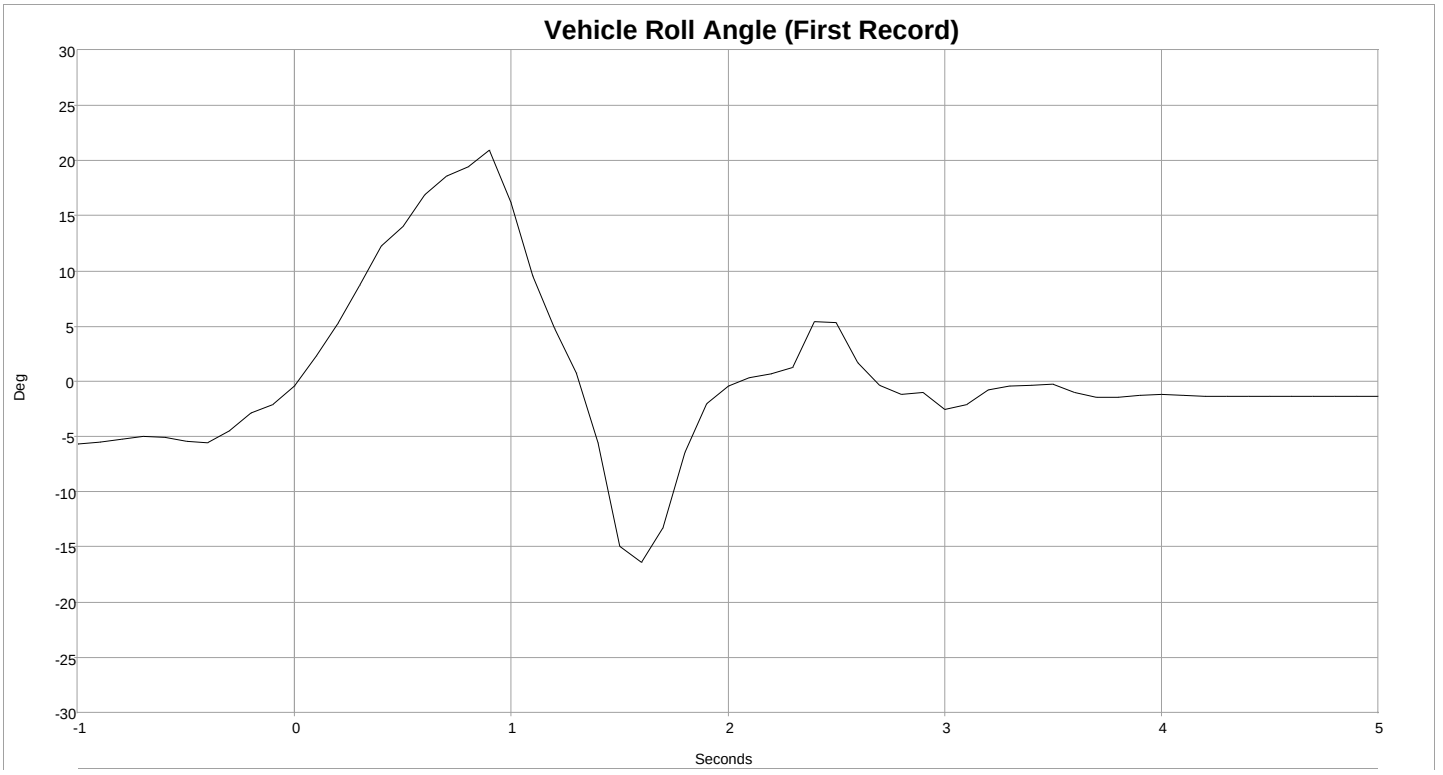
Longitudinal Crash Pulse (First Record)

Time (msec)	Delta-V, longitudinal (MPH)	Delta-V, longitudinal (km/h)
0	0.00	0.00
10	0.00	0.00
20	0.00	0.00
30	0.01	0.02
40	0.01	0.02
50	-0.01	-0.02
60	-0.06	-0.09
70	-0.10	-0.16
80	-0.12	-0.20
90	-0.12	-0.20
100	-0.13	-0.21
110	-0.14	-0.22
120	-0.14	-0.22
130	-0.13	-0.21
140	-0.13	-0.21
150	-0.13	-0.21
160	-0.13	-0.21
170	-0.14	-0.23
180	-0.16	-0.26
190	-0.19	-0.30
200	-0.22	-0.35
210	-0.25	-0.41
220	-0.26	-0.42
230	-0.26	-0.42
240	-0.29	-0.46
250	-0.32	-0.52



Lateral Crash Pulse (First Record)

Time (msec)	Delta-V, Lateral (MPH)	Delta-V, Lateral (km/h)
0	-0.01	-0.02
10	-0.05	-0.08
20	-0.05	-0.08
30	-0.05	-0.08
40	-0.05	-0.08
50	-0.05	-0.08
60	-0.06	-0.10
70	-0.11	-0.17
80	-0.15	-0.24
90	-0.19	-0.31
100	-0.22	-0.35
110	-0.22	-0.35
120	-0.23	-0.37
130	-0.27	-0.43
140	-0.32	-0.51
150	-0.36	-0.58
160	-0.40	-0.65
170	-0.44	-0.71
180	-0.45	-0.72
190	-0.45	-0.73
200	-0.50	-0.80
210	-0.54	-0.87
220	-0.59	-0.95
230	-0.63	-1.02
240	-0.70	-1.13
250	-0.78	-1.26



Vehicle Roll Angle (First Record)

Time (sec)	Vehicle Roll Angle (deg)
-1.0	-5.63
-0.9	-5.53
-0.8	-5.23
-0.7	-4.96
-0.6	-5.05
-0.5	-5.44
-0.4	-5.56
-0.3	-4.51
-0.2	-2.87
-0.1	-2.09
0.0	-0.46
0.1	2.27
0.2	5.24
0.3	8.67
0.4	12.26
0.5	14.07
0.6	16.94
0.7	18.59
0.8	19.46
0.9	20.96
1.0	16.22

Time (sec)	Vehicle Roll Angle (deg)
1.1	9.55
1.2	4.79
1.3	0.76
1.4	-5.60
1.5	-14.94
1.6	-16.36
1.7	-13.27
1.8	-6.44
1.9	-2.05
2.0	-0.41
2.1	0.37
2.2	0.68
2.3	1.23
2.4	5.38
2.5	5.33
2.6	1.70
2.7	-0.30
2.8	-1.15
2.9	-1.05
3.0	-2.50
3.1	-2.13

Time (sec)	Vehicle Roll Angle (deg)
3.2	-0.79
3.3	-0.40
3.4	-0.32
3.5	-0.24
3.6	-0.98
3.7	-1.42
3.8	-1.40
3.9	-1.23
4.0	-1.18
4.1	-1.30
4.2	-1.36
4.3	-1.36
4.4	-1.36
4.5	-1.36
4.6	-1.36
4.7	-1.36
4.8	-1.36
4.9	-1.36
5.0	-1.36

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.

```
$5B17 - Event Type
02 00 00 00

$F113 - RCM Part Number
48 4C 33 54 2D 31 34 42 33 32 31 2D 41 43 00 00 00 00 00 00 00 00 00 00

$F18C - RCM Serial Number
33 30 31 30 39 33 38 31 33 37 33 30 30 30 30 30

$F188 - RCM Software Part Number
47 52 33 54 2D 31 34 43 30 32 38 2D 41 41 00 00 00 00 00 00 00 00 00 00

$5800 - Left/Center Frontal Restraints Sensor Serial Number
00 02 29 DF 92 9F 82 00 00 00 00 00 00 00 00 00

$5801 - Left Side Restraints Sensor One Serial Number
00 00 00 A7 DF 44 F1 00 00 00 00 00 00 00 00 00

$5802 - Left Side Restraints Sensor Two Serial Number
00 04 29 DB 7E 9E 89 00 00 00 00 00 00 00 00 00

$5804 - Right Frontal Restraints Sensor Serial Number
00 02 29 DF 92 51 81 00 00 00 00 00 00 00 00 00

$5805 - Right Side Restraints Sensor One Serial Number
00 00 00 04 93 C8 F1 00 00 00 00 00 00 00 00 00

$5806 - Right Side Restraints Sensor Two Serial Number
00 02 29 DE B2 7F 5A 00 00 00 00 00 00 00 00 00

$DE00 - Original VIN
31 46 54 45 57 31 45 46 38 48 4B 2A 2A 2A 2A 2A 2A

$F190 - Current VIN
31 46 54 45 57 31 45 46 38 48 4B 2A 2A 2A 2A 2A 2A 00 00 00 00 00 00 00

$DE01 - RCM Option Content
E7 68 CC 3B 10 0C 67 00
```

$5817 - Event Record 1

```
76 23 00 00 86 23 00 00 52 D9 1A 00 AA 05 00 00 26 44 00 00 30 01 00 00 84 FC FF FF BC B6
05 00 30 9C 07 00 68 EA FF FF 00 00 00 00 00 00 00 00 00 00 00 00 F6 FF FF FF F6 FF FF FF
0A 00 00 00 32 00 00 00 5A 00 00 00 6E 00 00 00 70 00 00 00 74 00 00 00 78 00 00 00 78 00
00 00 76 00 00 00 76 00 00 00 76 00 00 00 76 00 00 00 80 00 00 00 92 00 00 00 A8 00 00 00
C0 00 00 00 E2 00 00 00 E8 00 00 00 E8 00 00 00 FE 00 00 00 20 01 00 00 F4 FF FF FF D4 FF
FF FF D4 FF FF FF D4 FF FF FF D4 FF FF FF D4 FF FF FF CA FF FF FF A2 FF FF FF 7A FF FF FF
54 FF FF FF 3C FF FF FF 3C FF FF FF 36 FF FF FF 10 FF FF FF E8 FE FF FF C0 FE FF FF 98 FE
FF FF 78 FE FF FF 74 FE FF FF 6C FE FF FF 44 FE FF FF 1C FE FF FF F4 FD FF FF CC FD FF FF
8E FD FF FF 46 FD FF FF 54 4A 00 00 7A 4A 00 00 A4 4A 00 00 86 4A 00 00 40 4A 00 00 CA 4A
00 00 F2 4B 00 00 B6 4D 00 00 F6 50 00 00 1E 55 00 00 EE 58 00 00 E4 59 00 00 84 5B 00 00
54 64 00 00 60 6C 00 00 98 71 00 00 A2 76 00 00 C4 7B 00 00 2A 80 00 00 98 83 00 00 66 86
00 00 9C 89 00 00 C0 8C 00 00 CE 8E 00 00 66 90 00 00 7E 91 00 00 78 DC FF FF 42 DC FF FF
1A DC FF FF 04 DC FF FF 1C DC FF FF 34 DC FF FF 0A DC FF FF B0 DB FF FF E4 DA FF FF 5A D9
FF FF 86 D9 FF FF 42 D9 FF FF 24 D9 FF FF 6A D8 FF FF E4 D6 FF FF 1E D7 FF FF 68 D6 FF FF
C4 D5 FF FF 7A D5 FF FF 50 D5 FF FF 74 D5 FF FF 16 D5 FF FF 74 D4 FF FF F8 D3 FF FF 6E D3
FF FF B4 D2 FF FF D1 EE FF FF 23 EF FF FF 0C F0 FF FF DF F0 FF FF 94 F0 FF FF 67 EF FF FF
05 EF FF FF 3F F2 FF FF 3A F7 FF FF 9E F9 FF FF 99 FE FF FF F1 06 00 00 00 10 00 00 72 1A
00 00 69 25 00 00 F4 2A 00 00 B4 33 00 00 B9 38 00 00 67 3B 00 00 F8 3F 00 00 81 31 00 00
26 1D 00 00 A2 0E 00 00 53 02 00 00 E9 EE FF FF 65 D2 FF FF 16 CE FF FF 7D D7 FF FF 59 EC
FF FF C1 F9 FF FF C1 FE FF FF 22 01 00 00 16 02 00 00 BE 03 00 00 69 10 00 00 46 10 00 00
2E 05 00 00 15 FF FF FF 7A FC FF FF C9 FC FF FF 5E F8 FF FF 7E F9 FF FF 93 FD FF FF C6 FE
FF FF 07 FF FF FF 45 FF FF FF 00 FD FF FF AE FB FF FF BD FB FF FF 3F FC FF FF 66 FC FF FF
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D4 FF D7 FF D8 FF D8 FF D8 FF D9 FF D7 FF D7 FF D7 FF D7 FF D7 FF D5 FF D4 FF D0 FF CB FF
C6 FF C6 FF CB FF CF FF CF FF CF FF CB FF C6 FF A0 FF 75 FF 3F FF C4 FF D5 FF DB FF DB FF
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3A 00 25 00 19 00 23 00 28 00 1C 00 1D 00 14 00 1A 00 20 00 25 00 E9 FF 10 00 E8 FF D2 FF
E9 FF D0 FF C0 FF C5 FF D5 FF C5 FF B4 FF B6 FF B8 FF B8 FF 95 FF A2 FF A2 FF BA FF C3 FF
C8 FF C7 FF D2 FF D6 FF E8 FF E8 FF F3 FF DA FF CE FF E9 FF 08 00 ED FF D3 FF C6 FF E4 FF
DC FF D5 FF F5 FF 06 00 03 00 D1 FF C8 FF FE FF 21 00 27 00 FB FF EB FF F8 FF EB FF C6 FF
FD FF 0F 00 35 00 ED FF C3 FF E0 FE A9 FF 3F 00 F5 FE 16 FF 2A FF 1A FF 28 FF 3A FF 32 FF
FB FE F7 FE 10 FF 1A FF 4E FF 5C FF 5C FF 66 FF 95 FF B5 FF 95 FF 99 FF 9B FF 7E FF 8F FF
D3 FF D1 FF A1 FF 7C FF C9 FF DF FF B7 FF 91 FF C9 FF ED FF 97 FF 88 FF 97 FF ED FF 0D 00
91 FF 58 FF 9F FF D9 FF C1 FF 80 FF B1 FF 1B 00 D5 FF 5E FF B3 FF C1 FF 9F FF 14 FF C6 00
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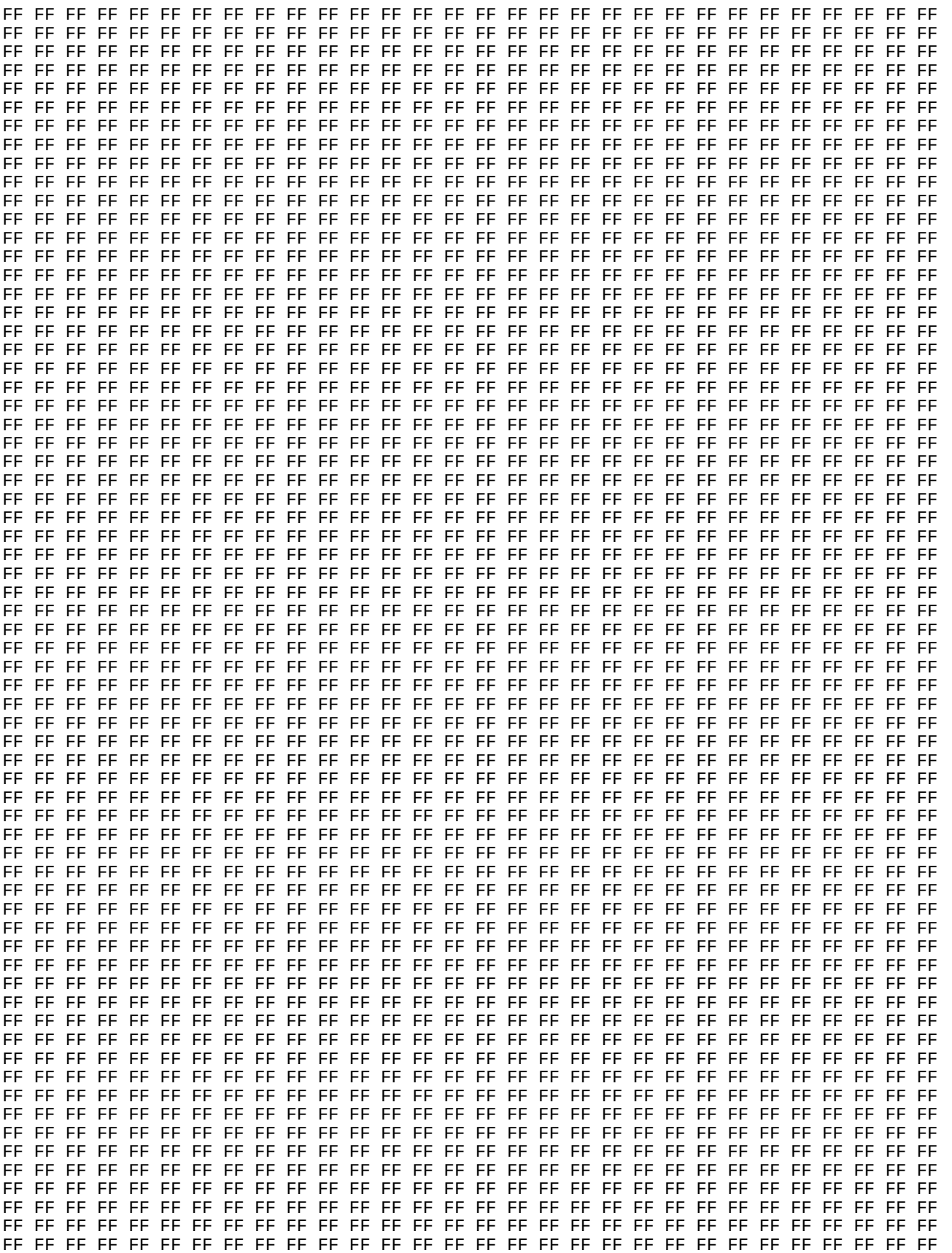

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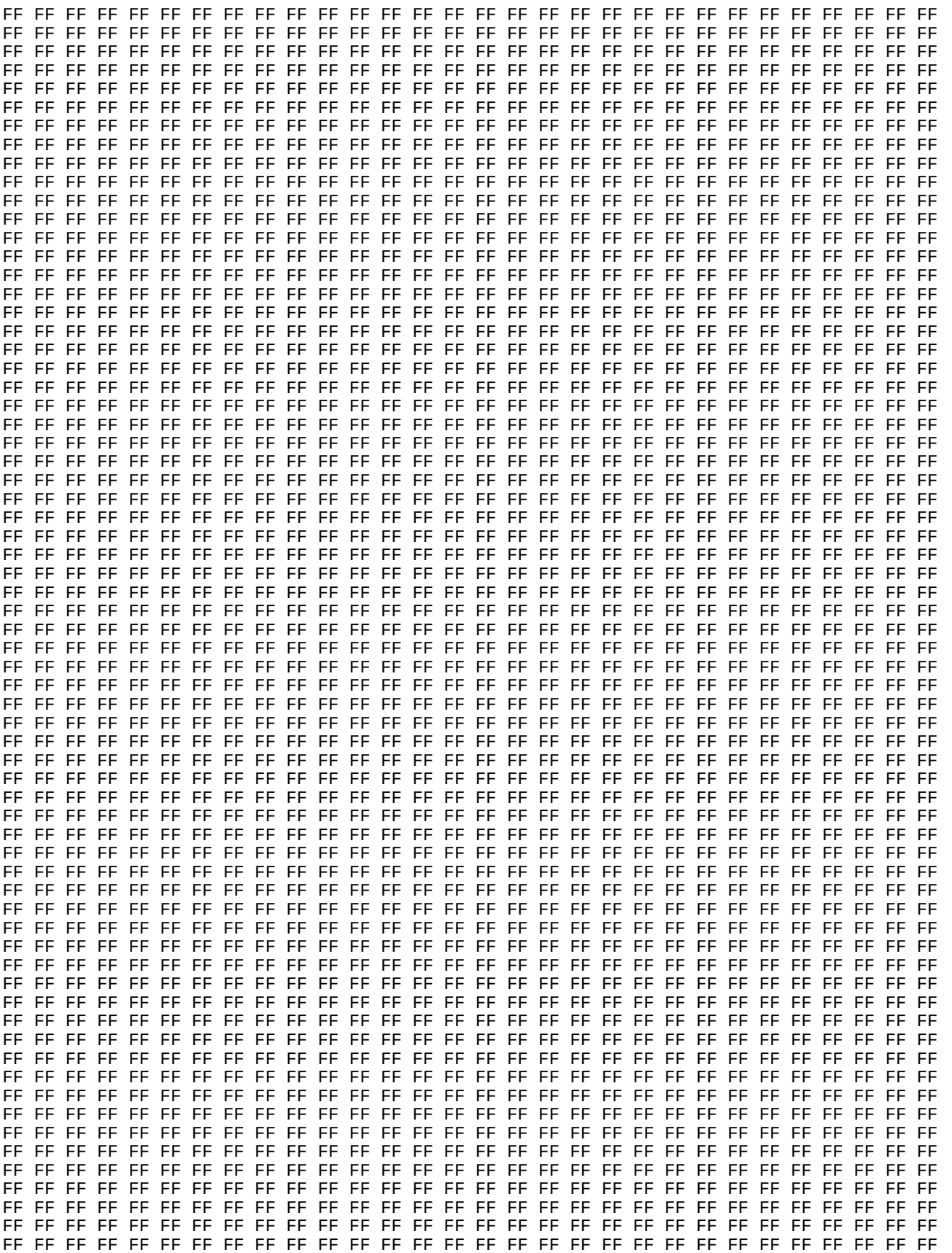

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$EE00 - Decoder DID

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