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Special Crash Investigations: On-Site Ambulance Crash Investigation; Vehicle: 2017 Ford Transit Type II Ambulance; Location: Ohio; Crash Date: October 2018

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Special Crash Investigations
On-Site Ambulance Crash Investigation
Case No.: CR18032
Vehicle: 2017 Ford Transit Type II Ambulance
Location: Ohio
Crash Date: October 2018

Background

This report documents the on-site investigation of a crash involving a 2017 Ford Transit Type II ambulance (Figure 1) and a 2014 RAM 2500, which resulted in the death of the ambulance's unbelted 43-year-old female front-row right occupant, a paramedic. The RAM lost control while traveling northbound, and yawed over the roadway's centerline into the path of the ambulance. The right front corner of the ambulance struck the right plane of the RAM. The ambulance was responding to a medical emergency at the time of the crash and was operating with its emergency warning lights and siren in use. It was driven by a belted 28-year-old male emergency medical technician (EMT) with the female paramedic sitting in the right front passenger seat. Both the EMT and the paramedic were transported by other ambulances to local hospitals for treatment. The female paramedic was pronounced deceased within hours of the crash, while the driver sustained incapacitating (A-level) but non-life-threatening injuries. The driver of the RAM also sustained serious but non-life-threatening injuries.



Figure 1. Forward right oblique view of the 2017 Ford Transit ambulance at the time of the SCI inspection

This crash was identified by the National Highway Traffic Safety Administration in October 2018. NHTSA notified the Special Crash Investigations (SCI) group and assigned the crash for on-site investigation. The SCI investigator located the ambulance in possession of the emergency medical services (EMS) agency owner and established cooperation to conduct an inspection of the vehicle. The SCI investigator then located the RAM at a local tow facility and established cooperation with the investigating law enforcement agency to inspect it. The on-site portion of this SCI investigation occurred in October 2018. On-site activities included an inspection of the ambulance to examine and document the exterior and interior damage, identify occupant contact, and evaluate the supplemental and manual restraint systems. An inspection of the RAM documented its exterior damage. Event data recorder (EDR) data was imaged from the air bag control modules (ACM) of both the ambulance and RAM using the Bosch Crash Data Retrieval

(CDR) software and tool. Additionally, the SCI investigator documented the crash site using photographs and a total station mapping system. An interview of the ambulance agency's staff was conducted during the on-site activities. Documentation of the injuries sustained by the front row right paramedic were obtained from the medical examiner.

Crash Summary

Crash Site

The crash occurred on a rural two-lane, State-maintained roadway during the evening. Illumination conditions were twilight (shortly after civil twilight), without artificial lighting. At the time of the crash the National Weather Service reported cloudy skies with moderate rain, a temperature of 10 °C (50 °F), 100 percent relative humidity, and a 8 km/h (5 mph) easterly breeze. The police crash report (PAR) listed the environmental conditions as dusk, rain, and wet.

The north/south roadway consisted of a single travel lane in each direction divided by a double-solid yellow centerline and delineated by single-solid white fog lines. Each lane measured 4.0 m (13.1 ft) wide. There were no shoulders. In the vicinity of the crash, the east roadside was populated by various trees and other vegetation. The west roadside was the expansive front lawn of a private residence, with a wooden fence that paralleled the roadway 5.5 m (18.0 ft) west of the west road edge. The roadway was asphalt surfaced. Speed in both directions was regulated by a posted limit of 89 km/h (55 mph). Continuous tactile rumble strips were cut into the roadway surface immediately inboard of the fog lines. Figure 2 shows a south-facing view of the roadway for the ambulance's pre-crash travel trajectory, while Figure 3 shows the northbound trajectory of the RAM. A crash diagram showing a schematic of the crash sequence is included at the end of this report.



Figure 2. South-facing view of the roadway for the ambulance's pre-crash travel trajectory



Figure 3. North-facing view of the roadway and pre-crash approach for the RAM

Ambulance Agency, Crew, and Transport Description

The private ambulance agency was a multi-tiered medical transport service not associated with any particular medical treatment center. It was capable of providing all levels of EMS care, from basic life support to advanced critical care. The agency performed public emergency response, inter-facility transfers, private requests, and specialty transports, using a fleet primarily of Type II ambulances.

The ambulance agency employed career professionals who consisted of administrative staff, support personnel, dispatchers, and EMTs of varying levels of care. The agency maintained its equipment and operated in compliance with all Ohio Department of Public Safety regulations. The ambulance agency required its employees who operated vehicles to complete emergency

vehicle operations training. The 28-year-old EMT driver had taken the training several times, with his last certification in March 2018.

EMS personnel were primarily scheduled on 24-hour shift rotations. The EMT driver had begun his 24-hour shift on the morning of the crash. He was approximately halfway into his shift when the crash occurred, and had not reported any issues concerning fatigue. He stated to law enforcement during the interview that he had slept for 6 hours the night before. The front-row right paramedic was working a “back-half cover,” which entailed working the second half of a shift to cover for a different employee. She had begun her on-duty time less than 30 minutes before the crash occurred.

Approximately a year prior to this crash, the ambulance agency instituted a fatigue policy that allowed its employees to take an extended break for rest and/or leave work early at their request after having several back-to-back transports or even just one long-duration transport. Management encouraged its employees to take advantage of this benefit, and self-reported that they had seen a decrease in on-duty fatigue.

Pre-Crash

The following pre-crash specifics were substantiated from the evidence gathered during the SCI investigation, from statements made by the ambulance agency’s managerial staff during interview, and a review of the law enforcement documentation of the crash. Prior to the crash the involved ambulance was requested to respond to an emergency 9-1-1 call at a local nursing home facility for an unresponsive person. The nursing home was located approximately 16 km (10 mi) from the ambulance’s location at the time of dispatch, and the ambulance began responding to the call in emergency mode with emergency warning lights and siren activated. The 28-year-old EMT drove the ambulance, restrained by the available 3-point lap and shoulder seat belt system, with the driver seat adjusted to a rearmost track position with the seatback slightly reclined. The 43-year-old paramedic occupied the front row right position, but was not belted.

The ambulance traveled south along the State-maintained two-lane roadway. It passed numerous vehicles that pulled over and stopped to yield the right-of-way to the emergency vehicle. Approximately halfway into the trip, the ambulance negotiated a right curve and approached the location of the crash. Managerial staff of the ambulance agency stated that GPS data from the involved ambulance reported a most recent speed of 100 km/h (62 mph) prior to the crash. The driver stated to investigating law enforcement personnel that while he was driving the vehicle at approximately 105 km/h (65 mph), he saw the oncoming RAM cross over the centerline, but did not have time to react.

Data imaged from the ambulance’s EDR corroborated the reported GPS data and driver’s statement, with the reported vehicle speed of 99-100 km/h (62 mph) over the final 2 seconds of the pre-crash buffer data sample. Although the reported brake status at time zero of the pre-crash data was “On,” all prior samples were “Off.” There was no evidence at the crash site of pre-crash braking or other avoidance action by the ambulance’s driver prior to the crash.

The RAM traveled north on the same roadway. It negotiated a right curve and entered a straight section of roadway while traveling at an EDR-reported speed of 83 km/h (51 mph) at the 4-second pre-crash data sample. At least one non-contact vehicle (NCV) was traveling north ahead of the RAM. The driver of one NCV detected the oncoming ambulance operating in an emergency mode and came to a controlled stop on the right road edge. The RAM rapidly

approached the stopped NCV, and its driver took evasive action by steering left and braking. The RAM's driver then experienced a loss of control. A review of the vehicle speed, service brake status, ABS activity, steering angle, and yaw rate data imaged from the RAM confirmed that the driver steered slightly left at the beginning of the pre-crash buffer, followed by slightly right, significantly left, significantly right, and, finally, hard left. This back-and-forth steering angle data correlated to a yaw rate that first began counterclockwise, went slightly clockwise, and then became irreversibly counterclockwise. During the final half-second of the RAM's pre-crash buffer, the yaw rate approached and surpassed 40-degrees per second counterclockwise as the RAM yawed across the roadway into the ambulance's travel path. Based on the inspection of the RAM, the SCI investigator determined that the loss of control most likely resulted from insufficient tire tread (*see 2014 RAM 2500: Description*) for the wet road conditions.

Damage to the vehicles and their post-crash trajectories indicated that the vehicles' alignment at impact was the front plane, right aspect of the ambulance with the right plane, front aspect of the RAM. Gouges and post-crash evidence at the crash site were used in conjunction with the EDR data imaged from the ambulance and RAM to conduct an SCI reconstruction of the crash, which determined that the orientation (heading angle) of the vehicles at impact were 170-degrees for the ambulance and 320-degrees (right-side-leading) for the RAM.

Crash

The ambulance's right front corner struck the forward aspect of the RAM's right plane in an offset, angular configuration (Event #1). Directions of force were within the 12 o'clock sector for the ambulance and the 1 o'clock sector for the RAM. Impact engagement forces halted the RAM's counterclockwise rotation and redirected its center of mass to the southwest. Crash forces and the vehicles' engagement induced a clockwise rotation to the ambulance. The vehicles were displaced to the south from the point of impact along the ambulance's trajectory. The RAM departed the west road edge and entered the grassy roadside, where it struck a wooden fence with its left front tire/wheel (Event #2) as it slid to final rest. The impact with the fence was of insufficient magnitude to result in damage to the RAM, but several pieces of the wooden fence were projected into the front lawn of the residence.

Gouge marks in the roadway evidenced the area of impact, as observed during the SCI crash site inspection and highlighted by the yellow circle in Figure 4. Tire marks in the soft soil surface, as well as a large oil spill pattern, evidenced the RAM's left side-leading trajectory into the roadside (Figure 5). At final rest, the RAM's left front tire/wheel was engaged against one of the wooden fence posts. The vehicle was facing in a westerly direction with its center of mass located 16.2 m (53.1 ft) south/southwest of the initial point of impact.



Figure 4. South-facing view of the roadway and gouge marks at the area of impact



Figure 5. Southwest-facing view of the RAM's redirected left side-leading trajectory and fence impact

The ambulance maintained some of its momentum as it rotated clockwise on a southbound trajectory and displaced/redirectioned the RAM. The ambulance completed a total rotation of approximately 125 degrees clockwise and slid to final rest in the roadway, facing northwest, with its center of mass located 14.5 m (47.6 ft) south of the point of impact. At rest the ambulance's right rear tire was positioned on the centerline of the roadway with its left front tire/wheel on the west (southbound) fog line. A small post-crash fire then developed in the engine area of the ambulance (Event #3). Figure 6 shows the vehicles at final rest, in an on-scene image obtained from the investigating law enforcement agency.



Figure 6. South-facing view of the ambulance and RAM at final rest (on-scene law enforcement image)

Post-Crash

There were witnesses to the crash who contacted the local emergency response system. Local fire department, law enforcement, and EMS personnel responded to the crash site. Passersby stopped to offer assistance. One retrieved a dry chemical fire extinguisher and discharged its contents onto the ensuing engine compartment fire in the ambulance in an attempt to extinguish it.

The small fire persisted, and a second dry chemical extinguisher from an arriving law enforcement vehicle was discharged on the ambulance's engine compartment. These efforts put the small fire out. The webbing of the ambulance driver's seat belt system was cut near the D-ring location of the system in order to release the tension on the driver's seat belt system and enable him to exit the vehicle. EMS providers removed the ambulance driver and transported him by ambulance to a local hospital, where he was evaluated and treated for reported incapacitating (A-level) but non-life-threatening injuries. The front row right occupant was also removed and transported by another ambulance to a local hospital. She was pronounced deceased shortly following her arrival at the hospital.

A local recovery service removed the ambulance from the crash scene and transferred it to a secure warehouse of the ambulance agency, where it was held pending investigation of the crash. The RAM was towed to a local yard, where it was held under law enforcement impound.

2017 Ford Transit

Description

The 2017 Ford Transit was manufactured in August 2017 and identified by the Vehicle Identification Number (VIN) 1FDYR2CM6HKxxxxxx. Its powertrain consisted of a 3.7 liter, V-6, gasoline engine linked to a 6-speed automatic transmission. The ambulance had power-assisted front and rear ventilated disc antilock brakes. The manufacturer's recommended tire size was 235/65R16C, with recommended cold tire pressures of 360 kPa (60 PSI) front and 490 kPa (71 PSI) rear. Figure 7 shows the ambulance at the time of the SCI inspection, while Figure 8 shows a similar 2018 Ford Transit ambulance for exemplar purposes.



Figure 7. Left front oblique view of the 2017 Ford Transit Type II ambulance



Figure 8. Left front oblique view of an exemplar Ford Transit ambulance of the same agency

At the time of the crash, the ambulance was configured with Continental Vanco Four Season tires of the recommended size, with matching tire identification numbers (TINs) of 65B0 HN6C 1#17. All tires had tread depths of 6 mm (8/32 in) or greater. There was no damage or restriction to the left front, left rear, or right rear tires. However, the right front tire was flat, de-beaded, and restricted, and the axle position was displaced rearward by the impact damage.

The ambulance cab had cloth-surfaced bucket seats that had adjustable head restraints and folding inboard armrests. The driver's seat featured multi-directional electronic adjustment controls, while the front row right position seat was equipped only with manual adjustments. Both seats were positioned to their respective rearmost track positions, with their seatbacks slightly reclined. The driver's head restraint was adjusted 1 cm (0.4 in) upward, while the front row right was 2 cm (0.8 in) upward. Customized emergency lighting switches and radio communication equipment were mounted to the center instrument stack.

Safety equipment consisted of 3-point lap and shoulder seat belt systems with retractor pretensioners for both of the cab's seat positions. Supplemental restraint was provided by dual-stage frontal, seat-mounted side impact, and roof-mounted inflatable curtain (IC) air bags.

Type II Ambulance Patient Compartment

The ambulance was completed as a Type II¹ during secondary manufacturing (*specific date unknown*). During that time, the interior cargo area was transformed into a patient compartment equipped as a mobile emergency medical care unit. It had seating of up to four total occupants, which consisted of a rear-facing captain's chair at the forward aspect, a two-occupant left-facing bench seat on the right side, and a rear-facing wheeled ambulance cot.

A visual opening to the cab of the ambulance was located adjacent to the captain's chair. There were several cabinets and a counter area mounted to the left wall of the interior. The layout included double rear-entry doors for cot loading and a single right entry door. Figure 9 shows a forward-facing interior view of the ambulance's patient compartment. Interior cabinets were constructed of plywood and aluminum components of varying thicknesses, bonded together using a variety of glue, wooden pegs, and metal screws. Surfaces were covered with a laminate finish and/or vinyl-covered foam padding, and all cabinets were outfitted with clear polymer sliding doors. Aluminum corner bead and plastic were used for edge trim. Fiberglass and foam insulation provided thermal and acoustic protection from the environment. The patient compartment was unoccupied at the time of the crash.



Figure 9. Forward-facing view of the ambulance's patient compartment at the time of the SCI inspection

In addition to the completion of the patient compartment, secondary manufacturing also included the installation of emergency services operations equipment. This included emergency warning lights, sirens, and radio communications, which were installed in the ambulance's cab and about the exterior of the vehicle. This equipment was in use at the time of the crash.

¹ Editor's Note: There are four types of ambulances: I, II, III, and IV. A Type II ambulance is based on a commercial, heavy-duty van with few modifications except for a raised roof and a secondary air conditioning unit for the rear compartment. They are primarily used for basic life support and transfer of patients but can be used for advanced life support and rescue.

Vehicle Weight/Payload

The chassis was placarded by its manufacturer with a gross vehicle weight rating (GVWR) of 4,802 kg (9,000 lb). This was distributed as gross axle weight ratings (GAWR) of 1,873 kg (4,130 lb) front and 2,502 kg (5,515 lb) rear. According to title data, the vehicle's curb weight was 2,268 kg (5,000 lb). A placard in the left front door frame stated that the combined weight of the ambulance's occupants and payload should not exceed 985 kg (2,061 lb). During the SCI vehicle inspection, the SCI investigator estimated the weight of the equipment and supplies to be approximately 386 kg (850 lb). Based on the vehicle's placarded GVWR and other available weight information, it was the SCI investigator's assessment that the ambulance was operating in its usable payload capacity and weight rating at the time of the crash.

Exterior Damage

The cab sustained severe damage, biased to the front right aspect, as a result of the severe frontal crash with the RAM. Direct contact damage spanned the entire 184 cm (72.4 in) end width of the ambulance. Extensive damage was visible to the ambulance's front plane, consisting of severe longitudinal crush and complete separation of components. Both headlight assemblies were disintegrated, and both the bumper fascia and grille were completely fractured and separated. The bumper beam and upper radiator supports were sheared from the vehicle, the entire engine compartment components were displaced rearward, and the right frame rail was bent at an approximate 55-degree angle, pivoted at the right front axle position. Direct contact extended across the entire surface of the hood onto both A-pillars, with blue paint transfer and deformation to the windshield header and roof of the ambulance. Figure 10 shows a right crossing view of the ambulance and its severe front damage profile at the time of SCI inspection.



Figure 10. Right crossing view of the severe front plane damage profile to the ambulance

Due to the severe damage and the vertical extent of the profile, crush measurements were obtained at both a low level and high level. The low-level profile was documented to the front plane components and structure between the two frame rails (at the approximate height where the bumper beam would have been). The high-level profile was obtained across the hood of the ambulance between the two A-pillars, along a distinct profile of damage (Figure 11).



Figure 11. View of the front plane of the ambulance and the magnitude of the damage extent

The results of the crush profiles were averaged to produce the following residual crush profile results: C1 = 42 cm (16.5 in), C2 = 74 cm (29.1 in), C3 = 72 cm (28.3 in), C4 = 103 cm (40.6 in), C5 = 106 cm (41.7 in), and C6 = 95 cm (37.4 in). Maximum crush to the vehicle was observed in the area of the C5 measurement locations, left of the right frame rail, and the right front tire/wheel (axle position) was displaced rearward 29 cm (11.4 in). The collision deformation classification (CDC) assigned to the ambulance for the frontal impact was 12FDAW7.

The damage algorithm of the WinSMASH model was used to calculate the severity (delta V) reconstruction of the crash. The calculated total delta V of the ambulance for the Event 1 impact with the RAM was 79 km/h (49.1 mph). Longitudinal and lateral components of the calculated delta V were -77 km/h (-47.8 mph) and 14 km/h (8.7 mph), respectively. These results were borderline, but seemed reasonable and were similar to the delta V values in the EDR report.

The post-crash fire (Event 3) occurred in the engine compartment of the ambulance. It involved the engine and surrounding combustible components at the left aspect of the engine compartment. Little damage was discernable from the fire other than slight charring and discoloration to the painted white surfaces of the vehicle. Figure 12 shows the charring discoloration to the left aspect of the ambulance's hood from the post-crash fire. Discharge of the dry chemical extinguishers masked other fire-related damage. This event was beyond the scope of the CDC guideline.



Figure 12. Discoloration and charring to the ambulance's hood from the minor post-crash fire

Event Data Recorder

The ambulance chassis was equipped with an air bag restraint control module (RCM) mounted to the center tunnel beneath the center instrument panel. The RCM monitored and measured vehicle acceleration in several axes, and had EDR capabilities to record data for longitudinal, lateral, and rollover crash pulses. The SCI investigator imaged data from the ambulance during the vehicle inspection process using the current software version (17.9) of the Bosch CDR tool. The imaged data was read using software version 19.5, and is included at the end of this technical report as Appendix A.

The EDR component of the RCM could record “Non-Deployment,” “Air-Bag-Deployment,” or “Non-Air-Bag-Deployment” event types. By definition, non-deployment events were those in which the recording trigger threshold was met or exceeded, but no supplemental restraint devices (pretensioners or air bags) were actuated or deployed. Air-bag-deployment events were those in which frontal, seat-mounted, or IC air bags were commanded to deploy.

Similar to non-deployment event types, a non-air-bag-deployment event exceeded the recording threshold and actuated pretensioners or deployed knee air bags, but did not deploy frontal, seat-mounted, or IC air bags. Non-deployment and non-air-bag-deployment events could be overwritten by subsequent events, whereas deployment events became locked and could not be overwritten. The RCM had the capacity to store up to two events.

At algorithm enable (AE) and recognition of an event, the EDR had the capacity to record up to 250 milliseconds of longitudinal and lateral delta V data in 10 millisecond intervals. Roll angle data was recorded in 0.1-second intervals for 1 second prior and 5 seconds after AE. Associated to each event was a 5-second pre-crash buffer that recorded numerous vehicle operational parameters (vehicle speed [mph], accelerator pedal position [%], service brake [on/off], and other data).

The data was imaged on ignition cycle 295 and reported one event, which was a locked frontal deployment event type. It occurred on ignition cycle 294, when the key-on timer read 365 seconds. The key-on timer data indicated that the ambulance had been running for just over 6 minutes of continuous operation when the crash occurred, which matched the pre-crash activities of the ambulance. The driver’s belt status was reported as “buckled” for the recorded crash event. The air bag warning lamp was off, and there were no DTCs present at the time of the event. Based on SCI expertise, the locked frontal event was related to the SCI reconstructed first crash event with the right plane of the RAM. Pre-crash data for the recorded event included the following:

Time	Vehicle Speed km/h (mph)	Accelerator Pedal (%-full)	Service Brake	Engine rpm	ABS Activity	Steering Angle (deg)
-5.0	97 (60)	25.2	Off	2,006	Non-engaged	-6.2
-4.5	97 (60)	22.7	Off	1,972	Non-engaged	-8.4
-4.0	97 (60)	22.7	Off	1,978	Non-engaged	-8.3
-3.5	97 (60)	24.2	Off	1,980	Non-engaged	-9.1
-3.0	98 (61)	29.2	Off	1,996	Non-engaged	-10.3
-2.5	98 (61)	33.8	Off	2,014	Non-engaged	-10.1
-2.0	99 (62)	37.8	Off	1,998	Non-engaged	-7.6
-1.5	99 (62)	41.2	Off	2,210	Non-engaged	-5.9

Time	Vehicle Speed km/h (mph)	Accelerator Pedal (%-full)	Service Brake	Engine rpm	ABS Activity	Steering Angle (deg)
-1.0	99 (62)	41.9	Off	2,584	Non-engaged	-5.1
-0.5	100 (62)	41.9	Off	2,558	Non-engaged	-5.8
0.0	99 (62)	0.0	On	2,496	Non-engaged	13.1

The maximum recorded longitudinal vehicle velocity change of the recorded event was -81.67 km/h (-50.75 mph), which was reported at 292 milliseconds after AE. The maximum recorded lateral vehicle velocity change was 19.30 km/h (11.99 mph), reported 181 milliseconds after AE. Although the lateral delta V data had plateaued in the reported data, the longitudinal delta V was still increasing. This indicated that the crash pulse had not yet achieved its maximum within the reported 250-millisecond time interval (confirmed by the reported time of 292 milliseconds).

The recorded deployment event that produced the following commands:

Device	Time (milliseconds)
Pretensioner (retractor), driver	11.5
Pretensioner (retractor), right front	11.5
Frontal air bag, driver	28
Frontal air bag, right front	28
Inflatable curtain (IC), left	84.5
Inflatable curtain (IC), right	84.5
Side (seat-mounted) air bag, left	84.5
Side (seat-mounted) air bag, left	84.5

Interior Damage

There was major damage to the interior of the ambulance's cab, related to severe intrusion of frontal components biased to the right side of the interior. In its intruded state, the right aspect of the instrument panel was in close proximity to the front row right seatback, and the entire floor area at the front row right position was collapsed. The center stack and secondary manufactured emergency vehicle equipment console was fractured in several places, and the communications equipment was lying loose in the vehicle. A summary of the intrusions documented during the SCI vehicle inspection was as follows:

Component	Intruded Magnitude	Direction
Top left instrument panel at A-pillar junction	15 cm (5.9 in)	Longitudinal
Top center instrument panel	64 cm (25.2 in)	Longitudinal
Top right instrument panel at A-pillar junction	85 cm (33.5 in)	Longitudinal
Left lower A-pillar	13 cm (5.1 in)	Longitudinal
Right lower A-pillar	103 cm (40.6 in)	Longitudinal
Left floor/toe pan	23 cm (9.1 in)	Longitudinal
Right floor/toe pan	Indeterminate	Longitudinal
Left floor/toe pan	11 cm (4.3 in)	Vertical
Center instrument panel at driver's position	22 cm (8.7 in)	Lateral
Right instrument panel at right front position	38 cm (15.0 in)	Lateral

The SCI investigator observed that the entire structure of the right front door had been compressed in the damage and the entire opening was completely collapsed. The left front door frame was enlarged by induced deformation, and once the left front door had been opened post-crash, it would not re-latch. The windshield was fractured across its entire width by the crash forces and largely missing from the vehicle at the time of the SCI inspection. It is likely, though unconfirmed by physical evidence, that the windshield was contacted by the unbelted paramedic during the crash sequence. Both front door glazing were disintegrated.

The observed intrusion in the front of the ambulance was severe (Figure 13) in comparison to an exemplar (Figure 14).

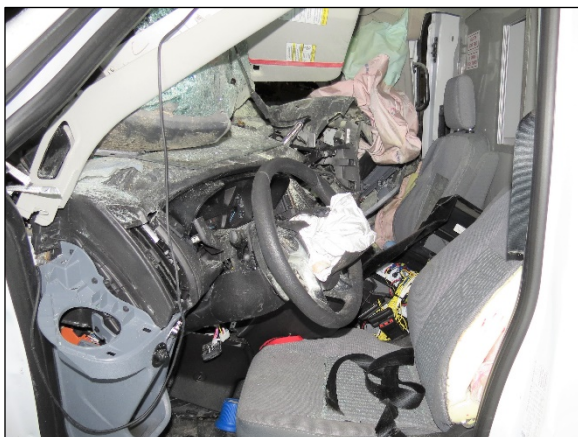


Figure 13. Right-facing crossing view of the severe front row intrusion inside the ambulance's cab



Figure 14. Right-facing view of the front row of an exemplar ambulance

Areas of occupant contact were documented during the SCI inspection. The discharge of the dry chemical fire extinguishers and the disintegration of glazing had covered the interior surfaces with a layer of dust and particulates that prevented the SCI investigator's use of yellow masking tape to highlight areas of occupant contact during photographic documentation of the ambulance. The occupant contact in the vehicle was documented as follows.

Component	Evidence	Occupant	Body Region	Confidence
Deployed driver's frontal air bag	Blood	Driver	Head/face	Certain
Left lower instrument panel	Deformed	Driver	Knees	Certain
Center instrument panel (intruded)	Scuffed	Driver	Right arm	Certain
Left door panel	Deformed	Driver	Left flank	Probable
Center instrument panel	Deformed	Front row right	Left flank	Probable
Deployed passenger's frontal air bag	Scuffed	Front row right	Chest	Certain
Right instrument panel (intruded)	Deformed	Front row right	Knees	Certain
Right door panel	Deformed	Front row right	Right flank	Certain
Deployed right IC air bag	Scuffed	Front row right	Right shoulder	Certain
Right upper A-pillar (intruded)	Blood	Front row right	Head/face	Certain
Windshield	Cracked	Front row right	Head/face	Probable

There was minimal damage to the patient compartment interior of the ambulance. No intrusion into the patient compartment occurred as a result of the severe frontal crash event. Objects in the

patient compartment were displaced forward during the front impact engagement, and most of the cabinetry contents remained in the confines of their respective cabinets. Long spine boards stored beneath the bench seat deformed the forward aspect of the bench seat base adjacent to the right door.

Manual Restraint Systems

The cab of the ambulance was configured with 3-point lap and shoulder seat belt systems for the driver and front right passenger positions. Both systems consisted of continuous loop webbing with a sliding latch plate, an adjustable D-ring, and retractor pretensioners. The front row D-rings were both adjusted to their respective full-down positions at the time of the SCI inspection. The retractor pretensioners were actuated as a result of the crash.

The driver's seat belt webbing was cut 29 cm (11.4 in) below the D-ring, with a 145 cm (57.1 in) portion of webbing attached to the lower anchor. The webbing was gathered into the forward aspect of the D-ring, with a 6 cm (2.4 in) long section of polymer transfer that evidenced load limiter release (Figure 15). An area of loading evidence on the webbing from the latch plate was observed 74 cm (29.1 in) above the lower anchor. It was apparent to the SCI investigator that the driver was belted.



Figure 15. Driver's seat belt system loading and webbing gathered in the D-ring

The front row right occupant's seat belt system was observed to be taut against the B-pillar of the ambulance at the time of the SCI vehicle inspection. It was apparent that it was not in use by the paramedic at the time of the crash.

The patient compartment had multi-point harness systems for each of the EMS crewmember seat positions (captain's chair and left-facing bench seat). These systems used several retractors, wall mounted D-rings, and a center chest buckle. None were in use at the time of the crash (patient compartment not occupied). Figure 16 shows the multi-point harness systems of the left-facing seat positions at the right bench seat in the patient compartment at the time of the SCI vehicle inspection. In the image, both systems are stowed.



Figure 16. Multi-point harness systems for the bench seat occupants of the ambulance's patient compartment

Supplemental Restraint Systems

The ambulance had a dual-stage frontal air bag system, front-seat-mounted side-impact air bags, and IC air bags that provided supplemental protection for both the driver and front right passenger positions. The driver's frontal air bag was mounted in the hub of the four-spoke steering wheel and concealed by an H-configuration cover flap.

The passenger's frontal air bag was mounted in the mid-upper aspect of the right instrument panel and also concealed by H-configuration cover flaps. An air bag cut-off switch for the passenger's frontal air bag was located in the right instrument panel, concealed in the storage compartment. The switch was not activated at the time of the crash; therefore, there was no suppression of the passenger's frontal air bag. All six available air bags deployed in the crash.

The driver's frontal air bag deployed from the module without damage. It was internally tethered, with a pair of 3 cm (1.2 in) diameter vents on the back side of the bag at the 11 and 1 o'clock positions. The air bag itself was 66 cm (26.0 in) in overall diameter in its deflated state, with a vertically-oriented 9x26 cm (3.5x10.2 in) rectangular center stitch pattern. An area of blood evidence, believed to be from driver contact, was observed at the upper left aspect of the air bag's face (Figure 17).



Figure 17. Deployed driver's frontal air bag in the ambulance at the time of the SCI inspection

The left IC air bag had been cut its entire length along the left roof side rail. The SCI investigator was unable to locate the remnants of the left IC air bag for inspection. However, an on-scene law enforcement image (Figure 18) showed the deployed left IC air bag, which indicated that there was no crash-related damage to the air bag prior to its post-crash removal. The driver's seat-mounted side impact air bag deployed through 60 cm (23.6 in) of stitching from the leading outboard edge of the seat back without damage. In its deflated state, the oval air bag measured 68 cm (26.8 in) tall and 30 cm (11.8 in) wide. There was a pair of 5 cm (2.0 in) vent ports along the forward (leading) edge of the air bag. Although there was an area of blood on the top aspect of the air bag from probable occupant contact during their egress/extrication, there was no crash-related damage to the deployed driver's seat mounted air bag (Figure 19).



Figure 18. View of the deployed left IC air bag (on-scene law enforcement image)



Figure 19. Deployed driver's seat-mounted side-impact air bag in the ambulance

All three air bags available for the front right passenger deployed, including the passenger's frontal, right front-seat-mounted side, and right IC air bags. However, the combination of the compressed/jammed status of the right front door and the severe intrusion of the right instrument panel prevented/inhibited the SCI investigator's ability to examine the air bags for contact or damage. Figure 20 shows the deployed passenger's frontal air bag at the time of the SCI inspection. The right front-seat-mounted side air bag was captured in the vehicle's damage pattern and could not be inspected. The right IC air bag was captured between the deformed right A-pillar and its fascia, the deformed right front door frame, and the surrounding headliner/trim components. Small areas of blood and possible body fluid transfer were visible on the air bag's fabric. The SCI investigator was unable to reach the deployed right IC air bag due to the vehicle damage, which inhibited its inspection. Figure 21 shows the right IC air bag at the time of the SCI vehicle inspection.



Figure 20. Deployed passenger's frontal air bag in the ambulance



Figure 21. Right IC air bag deployed in the ambulance and captured in the damage pattern

Wheeled Ambulance Cot

The wheeled ambulance cot installed was a Power Pro XT Model 6500, manufactured by Stryker. Its serial number was S/N 11124xxxx, indicative that it was manufactured in December 2011. The Stryker cot (Figure 22) was constructed of a tubular aluminum frame with circumferential weld joints and steel hardware fasteners. The X-frame supporting the mattress platform featured power lift capabilities with infinite height positions between a minimum of 36 cm (14.2 in) and a maximum of 105 cm (41.3 in).



Figure 22. View of the Stryker Power Pro wheeled ambulance cot at the time of the SCI inspection

The mattress platform featured 0 to 73 degrees of positive backrest angular adjustment via a manually controlled gas-pressure cylinder. In a similar fashion, the leg portion featured 15 degrees of positive angular adjustment. Overall dimensions of the cot were 58 cm (22.8 in) wide and 206 cm (81.1 in) long. A placard declared that the load capacity limit of the cot was 318 kg (700 lb). Electrical power was supplied by a removable DC battery.

The Stryker cot was equipped with a multi-point harness system for manual restraint of its patient. This system consisted of a lateral lower extremity strap, a lateral lap/thigh strap, and an upper torso harness which incorporated two shoulder straps that buckled into a lateral chest strap.

All straps were fixed-length webbing that included either locking latch plates or sewn buckles. The wheeled ambulance cot was not occupied at the time of the crash.

Cot Fastening System

The Stryker ambulance cot was secured in place and positioned in the floor of the patient compartment via a Stryker Model 6392 Performance-LOAD manual fastener system. It was manufactured in 2017 and identified by the S/N 201700090xxxx. The system consisted of two components, including a bracket/assembly that attached to the cot and a continuous bracket that mounted to the floor of the patient compartment. The bracket/assembly that attached to the cot had a single bolt head located toward the head-end of the cot, as well as a large bracket located at the foot-end of the cot. The continuous bracket that mounted to the patient compartment floor measured 178 cm (70 in) long, was 23 cm (9 in) wide at the rear (foot end), and was 48 cm (119 in) wide at the front (head end). Manufacturer specifications indicated that the complete system weighed a total of 28.5 kg (63 lb). The floor-mounted bracket guided the cot into the patient compartment of the ambulance, and captured the exposed head-end bolt in a forward latch and captured the foot-end bracket in a rear latch. Combined, this secured the cot longitudinally to the floor and restricted the multi-directional movement of the cot during vehicle operation. Figures 23 and 24 depict the floor-mounted Performance-LOAD fastener bracket in the ambulance as observed during the SCI inspection.



Figure 23. Forward-facing oblique view of the Performance-LOAD fastener during the SCI inspection



Figure 24. Rear-facing view of the cot fastener system in the ambulance's patient compartment

Figures 25 and 26 depict the foot-end bracket and head-end bolt that engaged and latched into the floor-mounted bracket of the fastener system.



Figure 25. Bracket of the fastener system attached to the foot-end of the cot



Figure 26. Head-end bolt securement for the cot.

Cot and Fastener Damage

There was no discernable damage sustained by the wheeled ambulance cot as a result of the crash. Following the SCI inspection, the ambulance agency intended on conducting an internal inspection of the cot and placing it back into service as a reserve unit.

The floor-mounted bracket of the cot fastener system appeared to have had a piece of its polymer trim come loose from its underside as a result of the crash. However, there was no discernable structural damage to the brackets or attachment points of the fastener system as a result of the crash.

2017 Ford Transit Occupant Data

Driver Demographics

Age/sex:	28 years/male
Height:	170 cm (67 in)
Weight:	77 kg (170 lb)
Eyewear:	None
Seat type:	Forward-facing bucket seat with adjustable head restraint
Seat track position:	Rearmost
Manual restraint usage:	3-point lap and shoulder seat belt
Usage source:	Vehicle inspection
Air bags:	Frontal, seat-mounted side impact, and IC air bags available; All deployed
Alcohol/drug involvement:	None
Egress from vehicle:	Assisted from the vehicle
Transport from scene:	Ambulance to a local hospital
Type of medical treatment:	Unknown

Driver Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
N/A	Unknown	N/A	N/A	N/A

Source – None, several requests denied

Driver Kinematics

The driver was seated in the ambulance's forward-facing bucket seat with the track adjusted to its rearmost position. The seatback was slightly reclined and the head restraint was adjusted flush to the top of the seat back (fully downward). The driver was restrained by the manual seat belt system, as determined through the combination of the SCI vehicle inspection and review of the imaged EDR data. The driver's specific posture remains unknown.

At impact with the RAM, the driver initiated a forward trajectory. His body loaded the lap and shoulder seat belt system, evidenced by its post-crash condition as observed by the SCI investigator during inspection. The driver loaded the deployed frontal air bag with his head and chest, while his knees contacted and engaged the intruding left/center lower instrument panel. These contacts likely resulted in several soft tissue and potentially internal injuries.

The driver remained in the driver's seat position of the ambulance as the vehicle came to final rest. Emergency responders cut the webbing of the seat belt system and removed him from the vehicle due to perceived serious injuries. He was transported to a local hospital for the treatment of reported incapacitating (A-level) injuries. Multiple requests made to the treating medical facility were denied repeatedly. Therefore, the driver's injury status and course of treatment remain unknown.

Front Row Right Occupant Demographics

Age/sex: 43 years/female
 Height: 160 cm (63 in)
 Weight: 127 kg (280 lb)
 Eyewear: None
 Seat type: Forward-facing bucket seat with adjustable head restraint
 Seat track position: Rearmost
 Manual restraint usage: 3-point lap and shoulder seat belt available, not used
 Usage source: Vehicle inspection
 Air bags: Frontal, seat-mounted side impact, and IC air bags available; All deployed
 Alcohol/drug involvement: None
 Egress from vehicle: Removed from vehicle while unconscious/unresponsive
 Transport from scene: Ambulance to a local hospital
 Type of medical treatment: Pronounced deceased shortly after arrival at hospital

Front Row Right Occupant Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Laceration and complete transection of thoracic segment of aorta	420210.5	Tandem IPC: Initial: Right Air Bag – Right top instrument panel Secondary: Front – Right instrument panel	Certain Certain
2	Lacerations of lower lobe of right lung and upper and lower lobes of left lung	441452.5	Tandem IPC: Initial: Right Air Bag – Right top instrument panel Secondary: Front – Right instrument panel	Certain Certain
3	Contusions of lower lobe of right lung and upper and lower lobes of left lung	441412.4	Tandem IPC: Initial: Right Air Bag – Right top instrument panel Secondary: Front – Right instrument panel	Certain Certain
4	Rib Cage fractures with flail-> unilateral flail chest-> 3-5 flail ribs [OIS IV], Left Anterior Rib 1, Left Posterior Rib 1, Left Anterior Rib 2, Left Posterior Rib 2, Left Anterior Rib 3, Left Posterior Rib 3, Left Anterior Rib 4, Left Posterior Rib 4, Left Anterior Rib 5	450212.3	Tandem IPC: Initial: Right Air Bag – Right top instrument panel Secondary: Front – Right instrument panel	Certain Certain

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
5	Right hemopneumothorax	442205.3	Tandem IPC: Initial: Right Air Bag – Right top instrument panel Secondary: Front – Right instrument panel	Certain Certain
6	Left hemopneumothorax	442205.3	Tandem IPC: Initial: Right Air Bag – Right top instrument panel Secondary: Front – Right instrument panel	Certain Certain
7	Contusion to right hemidiaphragm	440602.2	Isolated: Front - Right instrument panel	Certain
8	Right femur fracture	853000.3	Isolated: Front - Right lower instrument panel (includes knee bolster)	Certain
9	Left femur fracture	853000.3	Isolated: Front - Right lower instrument panel (includes knee bolster)	Certain
10	Cerebellum subarachnoid hemorrhage	140466.2	Isolated: Primary: Right side - Right A (A1/A2)-pillar; Alternate: Front - Windshield	Probable Possible
11	Subarachnoid hemorrhage on posterior aspects of right cerebral hemisphere	140693.2	Isolated: Primary: Right side - Right A (A1/A2)-pillar; Alternate: Front - Windshield	Probable Possible
12	Subarachnoid hemorrhage on posterior aspects of left cerebral hemisphere	140693.2	Isolated: Front – Windshield	Probable
13	Lacerations to anterior and posterior aspects of right lobe of liver	541820.2	Isolated: Front – Right instrument panel	Certain
14	Lacerations to anterior aspect of left lobe of liver	541820.2	Isolated: Front – Right instrument panel	Certain
15	Contusions to anterior and posterior aspects of right lobe of liver	541810.2	Isolated: Front – Right instrument panel	Certain
16	Contusions to posterior aspect of left lobe of liver	541810.2	Isolated: Front – Right instrument panel	Certain
17	Mesentery laceration, multiple	542020.2	Isolated: Front – Right instrument panel	Certain
18	Contusion to transverse colon [OIS I]	540810.2	Isolated: Front – Right instrument panel	Certain

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
19	Open fracture of right great toe	858212.1	Isolated: Floor – Floor (including toe pan) pan	Certain
20	Lacerations to left posterior aspect of scalp	110600.1	Isolated: Front – Windshield	Possible
21	Contusion to bilateral anterior frontal aspects of scalp	110402.1	Isolated: Front – Windshield	Probable
22	Contusions to left posterior aspect of scalp	110402.1	Isolated: Front – Windshield	Possible
23	Abrasions to bilateral anterior frontal aspects of scalp	110202.1	Isolated: Front – Windshield	Probable
24	Laceration to upper lip	210600.1	Isolated: Front – Windshield	Probable
25	Laceration to lower lip	210600.1	Isolated: Front – Windshield	Probable
26	Laceration and contusion to labial mucosa	243099.1	Isolated: Front – Windshield	Probable
27	Laceration to left lateral margin of tongue	243400.1	Isolated: Front – Windshield	Probable
28	Contusion to left lateral margin of tongue	243401.1	Isolated: Front – Windshield	Probable
29	Contusions to upper lip, lower lip, bilateral cheeks, tip of nose, anterior aspect of chin, left periorbital area	210402.1	Isolated: Front – Windshield	Probable
30	Abrasions to bilateral cheeks, tip of nose, anterior aspect of chin, left periorbital area	210202.1	Isolated: Front – Windshield	Probable
31	Contusions over right anterior and lateral aspect of chest	410402.1	Isolated: Front – Right instrument panel	Certain
32	Contusion over left anterior and lateral aspect of chest	410402.1	Isolated: Front – Right instrument panel	Certain
33	Abrasions over right anterior and lateral aspect of chest	410202.1	Isolated: Front – Right instrument panel	Certain
34	Abrasions over left anterior and lateral aspect of chest	410202.1	Isolated: Front – Right instrument panel	Certain
35	Contusions over right anterior and lateral aspect of abdomen	510402.1	Isolated: Front – Right instrument panel	Certain
36	Contusions over left anterior and lateral aspect of abdomen	510402.1	Isolated: Front – Right instrument panel	Certain
37	Abrasions over right anterior and lateral aspect of abdomen	510202.1	Isolated: Front – Right instrument panel	Certain
38	Abrasions over left anterior and lateral aspect of abdomen	510202.1	Isolated: Front – Right instrument panel	Certain
39	Multiple lacerations on posterior aspect of right forearm	710600.1	Isolated: Right side – Right A (A1/A2)-pillar	Probable

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
40	Contusions to lateral and posterior aspect of right upper arm	710402.1	Isolated: Right side – Right A (A1/A2)-pillar	Probable
41	Abrasions to lateral and posterior aspect of right upper arm	710202.1	Isolated: Right side - Right A (A1/A2)-pillar	Probable
42	Contusions to lateral and posterior aspect of right forearm	710402.1	Isolated: Right side - Right A (A1/A2)-pillar	Probable
43	Abrasions to lateral and posterior aspect of right forearm	710202.1	Isolated: Right side - Right A (A1/A2)-pillar	Probable
44	Contusions to medial aspect of right wrist	710402.1	Isolated: Right side - Right A (A1/A2)-pillar	Probable
45	Abrasions to medial aspect of right wrist	710202.1	Isolated: Right side - Right A (A1/A2)-pillar	Probable
46	Contusions to dorsum of right hand	710402.1	Isolated: Right side - Right A (A1/A2)-pillar	Probable
47	Abrasions to dorsum of right hand	710202.1	Isolated: Right side - Right A (A1/A2)-pillar	Probable
48	Contusions to anterior aspect of left upper arm	710402.1	Isolated: Front – Right instrument panel	Probable
49	Contusions to anterior aspect of right thigh	810402.1	Isolated: Front - Right lower instrument panel (includes knee bolster)	Certain
50	Contusions to anterior aspect of left thigh	810402.1	Isolated: Front - Right lower instrument panel (includes knee bolster)	Certain
51	Contusion to left knee	810402.1	Isolated: Front - Right lower instrument panel (includes knee bolster)	Certain
52	Abrasion to left knee	810202.1	Isolated: Front - Right lower instrument panel (includes knee bolster)	Certain
53	Contusion to right lower leg	810402.1	Isolated: Front - Right lower instrument panel (includes knee bolster)	Certain
54	Contusion to right ankle	810402.1	Isolated: Floor – Floor (including toe pan) pan	Certain
55	Abrasion to right ankle, anterior and lateral aspects	810202.1	Isolated: Floor – Floor (including toe pan) pan	Certain
56	Contusion to dorsum of right foot	810402.1	Isolated: Floor – Floor (including toe pan) pan	Certain
57	Contusion to dorsum and medial plantar aspect of left foot	810402.1	Isolated: Floor – Floor (including toe pan) pan	Certain

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
58	Contusion to right great toe	810402.1	Isolated: Floor – Floor (including toe pan) pan	Certain
59	Contusion to left second toe	810402.1	Isolated: Floor – Floor (including toe pan) pan	Certain
60	Abrasions to dorsal and medial aspects of right foot	810202.1	Isolated: Floor – Floor (including toe pan) pan	Certain

Source: Autopsy Report (internal)

Front Row Right Occupant Kinematics

The female paramedic was seated in the ambulance's front-row right forward-facing bucket seat with the seat track adjusted to its rearmost position. The seatback was slightly reclined and the head restraint was flush to the top of the seat back (fully downward). Although there was a 3-point lap and shoulder seat belt system available for her manual restraint, the front right occupant was not belted. The seat belt hung loosely from its stowed position prior to the crash. The front right occupant's lack of manual restraint usage was determined from the taut status of the system against the ambulance's right B-pillar at the time of the SCI vehicle inspection, in conjunction with a review of the data imaged from the ambulance's EDR.

At impact with the RAM, the unbelted front row right occupant initiated a forward trajectory. As she was displaced from position, the occupant contacted and loaded the deployed passenger's frontal air bag and right IC air bag. She loaded through the inflatable supplemental restraints and engaged the right instrument panel with her chest and abdomen as the instrument panel was thrust rearward by the intrusion. This directed the front row right occupant over the instrument panel, and her head/face contacted and engaged the right upper A-pillar and windshield. She also contacted the deployed right IC air bag and right upper A-pillar with her right arm and shoulder.

Severe intrusion of components surrounding the front row right occupant compressed her body into/against the seat and displaced her to the left. This exposed her lower extremities to contact and engagement with the right lower instrument panel and floor as they also intruded due to vehicle deformation.

The front row right occupant sustained numerous injuries due to her contact and loading of frontal components, exacerbated by their severe intrusion and the high severity of the crash. Contact and loading of the deployed air bag and right instrument panel as they intruded resulted in numerous and severe injuries, including aortic laceration/transection, lung lacerations and contusions, numerous rib fractures (with flail), bilateral hemopneumothoraxes, liver lacerations/contusions, mesentery lacerations, and numerous soft tissue injuries to the chest and abdomen. Contact and loading of the right lower instrument panel, compounded by loading from the intruding floor/toe pan, resulted in bilateral femur fractures and numerous soft tissue injuries to her legs and feet. The front row right occupant's contact with the windshield and upper A-pillar resulted in a cerebellum subarachnoid hemorrhage, cerebral subarachnoid hemorrhages, and numerous soft tissue injuries to her head, face, and right arm.

She was displaced slightly to the left by the intrusions and compressed between the intruded instrument panel and front row right seat cushion/seat back. She remained in the ambulance as

the vehicle slid to final rest. Emergency responders removed the front row right occupant while she was unconscious/unresponsive and transported her by ambulance to a local hospital. She was pronounced deceased shortly after arrival at the hospital.

2014 RAM 2500 HD

Description

The RAM (Figure 27) was manufactured in October 2013 and identified by the VIN 3C6UR5CL3EGxxxxxx. It was a crew cab pickup powered by a 6.7-liter, diesel engine linked to an automatic transmission. The GVWR was 4,536 kg (10,000 lb), with a front GAWR of 2,609 kg (5,750 lb) and rear GAWR of 2,722 kg (6,000 lb) rear. The vehicle manufacturer's recommended tire size was LT275/70R18, with recommended cold tire pressures of 415 kPa (60 PSI) front and 550 kPa (80 PSI) rear. At the time of the SCI inspection, the RAM had Kenda Klever M/T tires, size 35x12.50R17 LT. The left side tires had less than 2 mm (0.08 in) of tread, and the right rear tire was essentially bald (Figure 28) at its center aspect. Law enforcement documentation following the crash indicated that the RAM's tires were underinflated. It was apparent to the SCI investigator that the lack of sufficient tread on the RAM's tires was likely a contributory factor to the driver's pre-crash loss of control.



Figure 27. Left plane view of the RAM at the time of the SCI inspection



Figure 28. View of the bald tread of the RAM's right rear tire

Exterior Damage

Severe damage was apparent to the right plane of the RAM (Figure 29), associative to the impact with the ambulance. The severe deformation included lateral crush to both right doors, the right B-pillar, right A-pillar, right sill, right front axle position, and right front fender. A large U-shaped deformation pattern, similar in width to the end width of the ambulance, was visible to the occupant compartment of the RAM. It began on the right front fender and ended at the C-pillar area of the RAM's cab. The right wheelbase of the RAM was reduced by 96 cm (37.8 in). The direct damage began at the right front bumper corner and extended 266 cm (104.7 in) rearward to the lower aspect of the C-pillar.



Figure 29. Right plane damage pattern to the RAM as documented during the SCI inspection

Residual crush measurements were obtained during the SCI inspection using a direct and induced damage width (Field-L) that began at the right front bumper corner and extended 307 cm (120.9 in) to the forward edge of the right rear wheel opening on the side of the cargo bed. This produced the following resultant measurements: C1 = 11 cm (4.3 in), C2 = 23 cm (9.1 in), C3 = 70 cm (27.6 in), C4 = 79 cm (31.1 in), C5 = 44 cm (17.3 in), and C6 = 9 cm (3.5 in). Maximum crush to the vehicle measured 81 cm (31.9 in) and was observed at the forward lower aspect of the right front door, at the junction of the sill, and lower A-pillar. The CDC assigned to the Event 1 damage pattern was 01RDAW5. Figure 30 shows the Event 1 damage pattern to the RAM from an overhead perspective.



Figure 30. View of the right plane damage profile to the RAM from an overhead perspective

The damage algorithm of the WinSMASH model was used to calculate the severity (delta V) reconstruction of the crash. The calculated total delta V of the RAM for the Event 1 impact with the ambulance was 75 km/h (46.6 mph). Longitudinal and lateral components of the calculated delta V were -57 km/h (-35.4 mph) and -48 km/h (-29.8 mph), respectively. These results were borderline, but seemed reasonable and were similar to the delta V values in the EDR report.

There was no measurable deformation to the RAM in association to the fence impact (Event 2). The CDC assigned for the fence impact to the RAM's left front tire/wheel was 09LFWN1. No WinSMASH calculations could be performed for the Event 2 impact due to the lack of residual deformation.

Event Data Recorder

The RAM was equipped with an ACM mounted to the center tunnel beneath the front row, center position. The ACM monitored and measured vehicle acceleration in several axes, and had EDR capabilities to record data for longitudinal, lateral, and rollover crash pulses. The SCI investigator imaged data from the RAM during the vehicle inspection process using the current software version (17.9.1) of the Bosch CDR tool. The imaged data was later read using software version 19.5, and is included at the end of this technical report as Appendix B.

The EDR component of the ACM recorded and stored a crash pulse as an event when the delta V was approximately 8 km/h (5 mph) or greater within a 150-millisecond time interval. The EDR could record “Non-Deployment” or “Deployment” event types. The ACM had the capacity to store up to three events.

The RAM’s data was imaged on ignition cycle 12,440 and reported two events, which included one deployment event and one non-deployment event. The deployment event occurred on ignition cycle 12,438, and was related to the impact with the ambulance in the crash under investigation. The non-deployment event occurred on ignition cycle 12,268, and was a historical, unrelated event. The deployment event occurred when the RAM’s electronic odometer reading was 246,407 km (153,110 mi). It was the only event associated with the crash under investigation.

Upon AE and recognition of an event, the EDR had the capacity to record up to 300 milliseconds of longitudinal and lateral delta V data in 2 millisecond intervals. Roll angle data was recorded in 10 millisecond intervals for 2.5-seconds prior and 2.4-seconds after AE. For the recorded deployment event, the maximum longitudinal vehicle velocity change was -53 km/h (-32.9 mph), which was reported at 138 milliseconds after AE. The maximum recorded lateral vehicle velocity change was -47 km/h (-29.2 mph), reported 108 milliseconds after AE. The event produced actuation commands for the driver and passenger retractor pretensioners. Both the driver’s and passenger’s frontal air bags were commanded with a first stage deployment at 14 milliseconds and a second stage deployment at 24 milliseconds. The front row right seat-mounted side impact and right IC air bags were also commanded to deploy, although the time of the commands relative to AE were not specified.

Associated to each event was a 5-second pre-crash buffer that recorded numerous vehicle operational parameters, including vehicle speed (mph), accelerator pedal position (%), engine throttle (%), service brake (on/off), engine (rpm), ABS activity, stability control, steering input (degrees), individual wheel speed (rpm), yaw rate (deg/sec), and other operational data. For the recorded deployment event, the driver’s belt status was reported as “buckled.” Additional operational parameter data were also recorded, but the reader is cautioned that the RAM was equipped with tires that were larger than the vehicle manufacturer’s recommendation. Unless the RAM was recalibrated to accommodate the larger tire size, the RPM of the vehicle’s wheels with the larger tires would be less than the rpm of the recommended tires at the same speed. Therefore, the recorded pre-crash vehicle speed data may be lower than the vehicle’s actual speed, and the values of other parameters may also have been affected.

The pre-crash data for the RAM's recorded deployment event included the following:

Time	Vehicle Speed km/h (mph)	Accel. Pedal (%-full)	Service Brake	ABS Activity	Steering Angle (deg)	Yaw Rate (deg/sec)
-5.0	85 (53)	0	Off	No	7	0
-4.5	83 (52)	0	Off	No	0	0
-4.0	83 (51)	0	Off	No	-4	0
-3.5	81 (51)	0	On	No	10	0
-3.0	73 (46)	0	On	Yes	70	6
-2.5	58 (36)	0	On	Yes	-27	9
-2.0	62 (38)	0	On	Yes	-39	-9
-1.5	60 (37)	0	On	Yes	36	-5
-1.0	54 (34)	0	On	Yes	132	20
-0.5	50 (31)	0	On	Yes	166	39

Occupant Data

The RAM was driven by an unbelted 22-year-old male. When the crash occurred, the driver was traveling north after work to a retail store to buy groceries. According to the RAM driver's statements to law enforcement, he was not wearing his seat belt at the time of the crash, but the belt system was buckled behind him. The driver was a habitual non-user of the seat belt system and left it buckled to override the warning chime. The crash deployed the driver's frontal, passenger's frontal, right front-seat-mounted, and right IC air bags, as well as the actuation of the front seat belt pretensioners. The unbelted driver was displaced to the right in the vehicle during the crash, and deformed interior components during his kinematic response. Law enforcement indicated that he sustained minor (C-level) injuries and was transported by ambulance to a local hospital. The driver was treated for several soft tissue injuries and released within hours of the crash. He refused to provide blood/urine samples to law enforcement for toxicology screening.

Crash Diagram

OHIO
OCTOBER 2018

ILLUMINATION: TWILIGHT (EVENING)
ATMOSPHERIC: CLOUDY, RAIN
ROADWAY: BITUMINOUS, WET
SPEED LIMIT: 89 KM/H (55 MPH)

V1: 2017 FORD TRANSIT
V2: 2014 RAM 2500 HD
NCV: NON-CONTACT VEHICLE

V1 TRAVELS SOUTH AT EDR-REPORTED 99 KM/H (62 MPH)

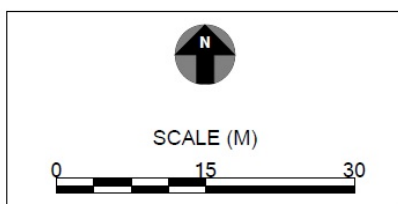
EVENT #1: V1 / V2 POINT OF IMPACT

EVENT #3: V1 POST-CRASH FIRE; V1 FINAL REST

V2 DRIVER OVERCORRECTS, LOSES CONTROL

EVENT #2: V2 / FENCE IMPACT; V2 FINAL REST

V2 DRIVER STEERS RIGHT, OVERCORRECTS, THEN STEERS LEFT



NON-CONTACT VEHICLE SEES ONCOMING AMBULANCE
OPERATING IN EMERGENCY MODE, PULLS TO RIGHT,
AND COMES TO CONTROLLED STOP

V2 DRIVER STEERS LEFT, AVOIDS STOPPED VEHICLE

V2 TRAVELS NORTH AT AN EDR-REPORTED 83 KM/H (51 MPH)

Case Number:	CR18032

Appendix A: 2017 Ford Transit Event Data Recorder Report

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	1FDYR2CM6HK*****
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	CR18032_V1_ACM.CDRX
Saved on	Thursday, November 1 2018 at 12:54:49
Imaged with CDR version	Crash Data Retrieval Tool 17.9
Imaged with Software Licensed to (Company Name)	NHTSA
Reported with CDR version	Crash Data Retrieval Tool 19.5
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.

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 pretensioners, 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... These modules

communicate to the RCM via Vehicle Communication Network. The RCM stores the received data internally.

02010_RCM-RC7_r001

System Status at Time of Retrieval

VIN As Programmed into RCM at Factory	1FDYR2CM6HK*****
Current VIN from PCM	1FDYR2CM6HK*****
Ignition Cycle, Download (First Record)	295
Ignition Cycle, Download (Second Record)	N/A
Restraints Control Module Part Number	CK4T-14B321-CG
Restraints Control Module Serial Number	7039782430250000
Restraints Control Module Software Part Number (Version)	BK2T-14C028-BA
Driver Side/Center Frontal Restraints Sensor Serial Number	00062A6A
Driver, Row 1, Side Restraint Sensor 1 Serial Number	00000082
Driver, Row 2, Side Restraint Sensor 2 Serial Number	001A2A6A
Passenger Frontal Restraints Sensor Serial Number	00000000
Passenger, Row 1, Side Restraint Sensor 1 Serial Number	00000006
Passenger, Row 2, Side Restraint Sensor 2 Serial Number	00282A70

System Status at Event (First Record)

Recording Status	Record Locked
Complete File Recorded (Yes, No)	Yes
Multi-Event, Number of Events	1
Time From Event 1 to 2 (msec)	N/A
Lifetime Operating Timer at Event Time Zero (sec)	767.900
Key-On Timer at Event Time Zero (sec)	365
Vehicle Voltage at Time Zero (V)	14.175
Energy Reserve Mode Entered During Event (Yes, No)	Yes
Time Driver Side/Center Frontal Restraints Sensor Lost Relative to Time Zero (msec)	11.0

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)	28.0
Side Curtain Airbag Deployment, Time to Deploy, Driver Side (msec)	84.5
Side (Thorax) Air Bag Deployment, Time to Deploy, Driver (msec)	84.5
Pretensioner (Retractor) Deployment, Time to Fire, Driver (msec)	11.5
Frontal Airbag Deployment, Time to First Stage Deployment, Front Passenger (msec)	28.0
Side Curtain Airbag Deployment, Time to Deploy, Passenger Right Side (msec)	84.5
Side (Thorax) Airbag Deployment, Time to Deploy, Right Front Passenger (msec)	84.5
Pretensioner (Retractor) Deployment, Time to Fire, Right Front Passenger (msec)	11.5
Maximum Delta-V, Longitudinal (MPH [km/h])	-50.75 [-81.67]
Time, Maximum Delta-V Longitudinal (msec)	292
Maximum Delta-V, Lateral (MPH [km/h])	11.99 [19.30]
Time, Maximum Delta-V Lateral (msec)	181
Driver or Center, Front Satellite Sensor, Discriminating Deployment	Yes
Driver or Center, Front Satellite Sensor, Safing	Yes
Passenger, Front Satellite Sensor, Discriminating Deployment	Yes
RCM Front (Longitudinal), Discriminating Deployment	Yes
RCM Front (Longitudinal), Safing	Yes
Longitudinal Delta-V Time Zero Offset (msec)	5.0 ms
Lateral Delta-V Time Zero Offset (msec)	5.0 ms
Roll Angle Time Zero Offset (msec)	95.0 ms

Pre-Crash Data -1 sec (First Record)

Ignition Cycle, Crash	294
Frontal Air Bag Warning Lamp, On/Off	Off
Frontal Air Bag Suppression Switch Status, Front Passenger	Not Active
Safety Belt Status, Driver	Buckled
Brake Telltale	Off
ABS Telltale	Off
ESC/TC Telltale	Off
ESC/TC Off Telltale	Default
Powertrain Wrench Telltale	Off
Powertrain Malfunction Indicator Lamp (MIL) Telltale	On

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

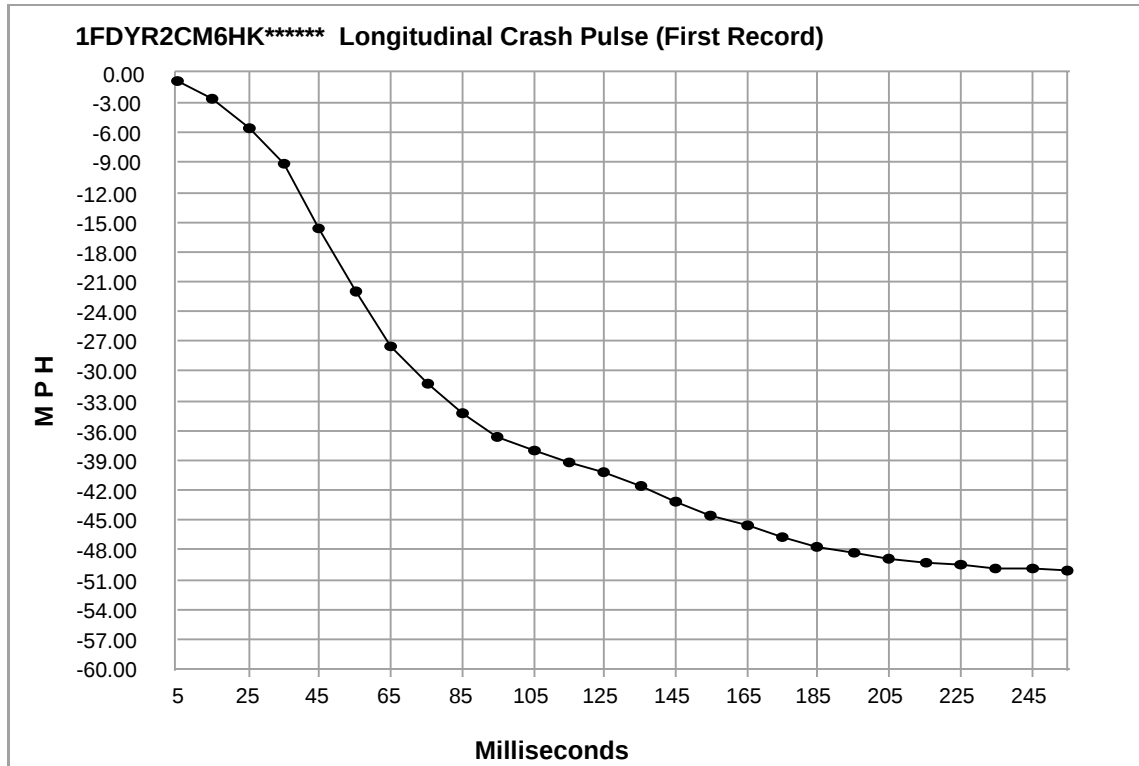
Times (sec)	Speed, Vehicle Indicated (MPH [km/h])	Speed, Vehicle Indicated Quality Factor	Accelerator Pedal, % Full	Accelerator Pedal Quality Factor	Service Brake, On/Off	Engine RPM	ABS Activity (Engaged, Non-Engaged)	Brake Powertrain Torque Request
- 5.0	60 [97]	OK	25.2	Ok	Off	2,006	non-engaged	No
- 4.5	60 [97]	OK	22.7	Ok	Off	1,972	non-engaged	No
- 4.0	60 [97]	OK	22.7	Ok	Off	1,978	non-engaged	No
- 3.5	60 [97]	OK	24.2	Ok	Off	1,980	non-engaged	No
- 3.0	61 [98]	OK	29.2	Ok	Off	1,996	non-engaged	No
- 2.5	61 [98]	OK	33.8	Ok	Off	2,014	non-engaged	No
- 2.0	62 [99]	OK	37.8	Ok	Off	1,998	non-engaged	No
- 1.5	62 [99]	OK	41.2	Ok	Off	2,210	non-engaged	No
- 1.0	62 [99]	OK	41.9	Ok	Off	2,584	non-engaged	No
- 0.5	62 [100]	OK	41.9	Ok	Off	2,558	non-engaged	No
0.0	62 [99]	OK	0.0	Ok	On	2,496	non-engaged	No

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

Times (sec)	Driver Gear Selection	Traction Control via Brakes	Wheel Torque (Nm)	Speed Control Telltale
- 5.0	Drive	non-engaged	432	Off
- 4.5	Drive	non-engaged	368	Off
- 4.0	Drive	non-engaged	364	Off
- 3.5	Drive	non-engaged	392	Off
- 3.0	Drive	non-engaged	512	Off
- 2.5	Drive	non-engaged	600	Off
- 2.0	Drive	non-engaged	632	Off
- 1.5	Drive	non-engaged	736	Off
- 1.0	Drive	non-engaged	904	Off
- 0.5	Drive	non-engaged	904	Off
0.0	Drive	non-engaged	304	Off

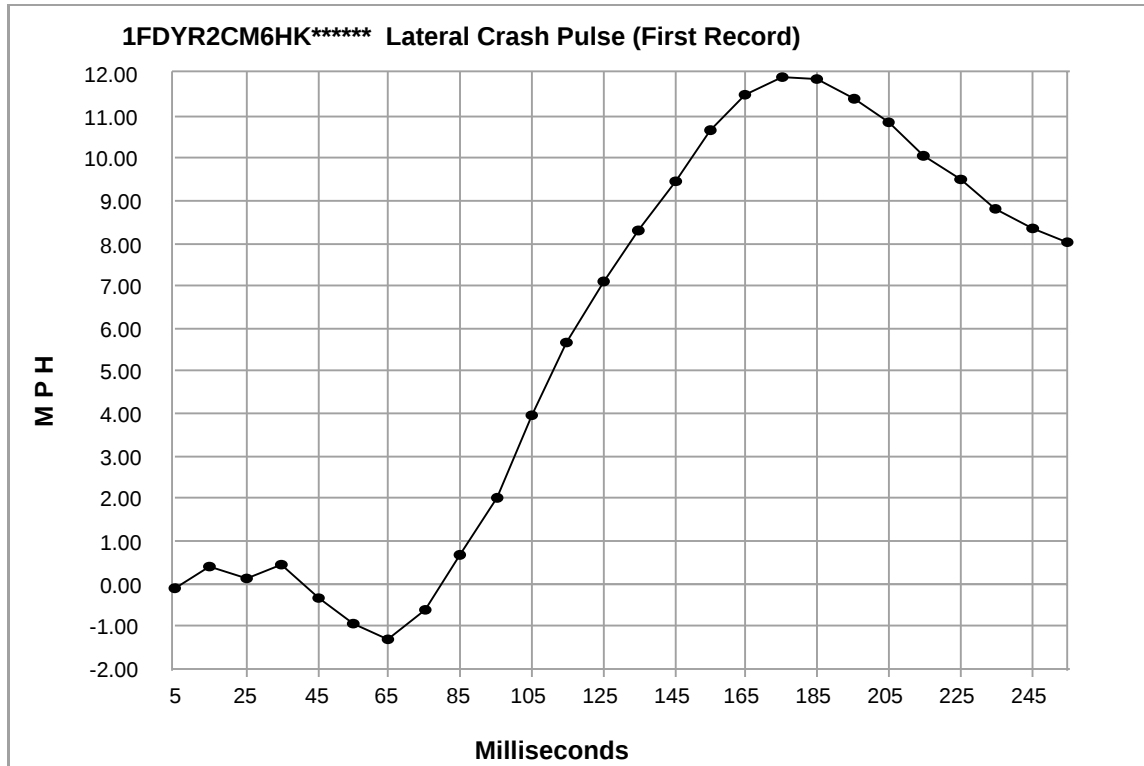
Pre-Crash Data -5 to 0 sec [10 samples/sec] (First Record)

Times (sec)	Steering Wheel Angle (degrees)	Stability Control Lateral Acceleration (g)	Stability Control Longitudinal Acceleration (g)	Stability Control Yaw Rate (deg/sec)	Stability Control Roll Rate (deg/sec)
- 5.0	-6.2	-0.016	-0.001	-0.95	0.4
- 4.9	-6.5	-0.027	-0.012	-1.31	0.72
- 4.8	-6.5	-0.028	-0.015	-1.5	1.28
- 4.7	-6.9	-0.031	0.011	-1.43	1.12
- 4.6	-8.0	-0.033	-0.015	-1.45	1.04
- 4.5	-8.4	-0.057	-0.019	-1.79	1.48
- 4.4	-8.5	-0.039	-0.017	-1.95	2.04
- 4.3	-8.3	-0.042	-0.001	-2.0	2.48
- 4.2	-8.4	-0.046	-0.012	-1.97	2.24
- 4.1	-8.1	-0.043	-0.027	-1.93	1.6
- 4.0	-8.3	-0.043	0.002	-2.06	1.48
- 3.9	-8.7	-0.033	-0.008	-2.09	0.44
- 3.8	-9.0	-0.036	-0.006	-2.11	-0.56
- 3.7	-9.2	-0.03	-0.026	-2.13	-1.16
- 3.6	-9.2	-0.041	0.006	-2.36	0.32
- 3.5	-9.1	-0.051	-0.005	-2.36	1.04
- 3.4	-9.2	-0.066	-0.012	-2.34	1.48
- 3.3	-9.3	-0.069	-0.016	-2.27	2.04
- 3.2	-10.2	-0.062	-0.007	-2.27	1.84
- 3.1	-10.4	-0.048	0.003	-2.5	1.28
- 3.0	-10.3	-0.062	-0.01	-2.81	0.88
- 2.9	-10.0	-0.063	0.0	-2.86	1.44
- 2.8	-10.4	-0.051	0.006	-2.63	1.28
- 2.7	-10.3	-0.066	0.018	-2.79	1.96
- 2.6	-10.3	-0.07	0.003	-2.84	1.88
- 2.5	-10.1	-0.053	0.009	-2.84	1.52
- 2.4	-9.6	-0.037	-0.005	-2.77	1.6
- 2.3	-9.3	-0.053	0.018	-2.63	1.24
- 2.2	-9.1	-0.036	0.011	-2.54	1.32
- 2.1	-8.4	-0.024	0.006	-2.5	0.8
- 2.0	-7.6	-0.023	0.009	-2.4	0.4
- 1.9	-6.0	-0.013	0.015	-2.22	-0.8
- 1.8	-5.6	0.0	-0.009	-1.86	-1.92
- 1.7	-5.7	0.0	-0.003	-1.63	-3.36
- 1.6	-5.7	0.018	-0.018	-1.65	-4.28
- 1.5	-5.9	0.01	-0.006	-1.84	-4.56
- 1.4	-5.8	-0.006	-0.011	-1.61	-3.84
- 1.3	-5.7	-0.015	0.017	-1.36	-3.28
- 1.2	-5.6	-0.019	0.009	-1.31	-2.88
- 1.1	-5.4	-0.008	0.034	-1.2	-2.44
- 1.0	-5.1	-0.021	0.024	-1.22	-1.36
- 0.9	-5.1	-0.019	0.038	-1.15	-0.8
- 0.8	-4.8	-0.011	0.024	-1.06	0.2
- 0.7	-4.9	-0.01	0.012	-1.0	-0.36
- 0.6	-5.0	-0.013	0.034	-1.0	-0.32
- 0.5	-5.8	-0.013	0.038	-0.95	-0.44
- 0.4	-8.6	-0.028	0.017	-1.22	-0.04
- 0.3	-15.2	-0.069	0.018	-1.79	-0.52
- 0.2	-5.6	-0.073	0.015	-2.93	-1.08
- 0.1	19.7	0.161	-0.016	-1.65	2.64
0.0	13.1	0.104	-0.345	2.81	6.04



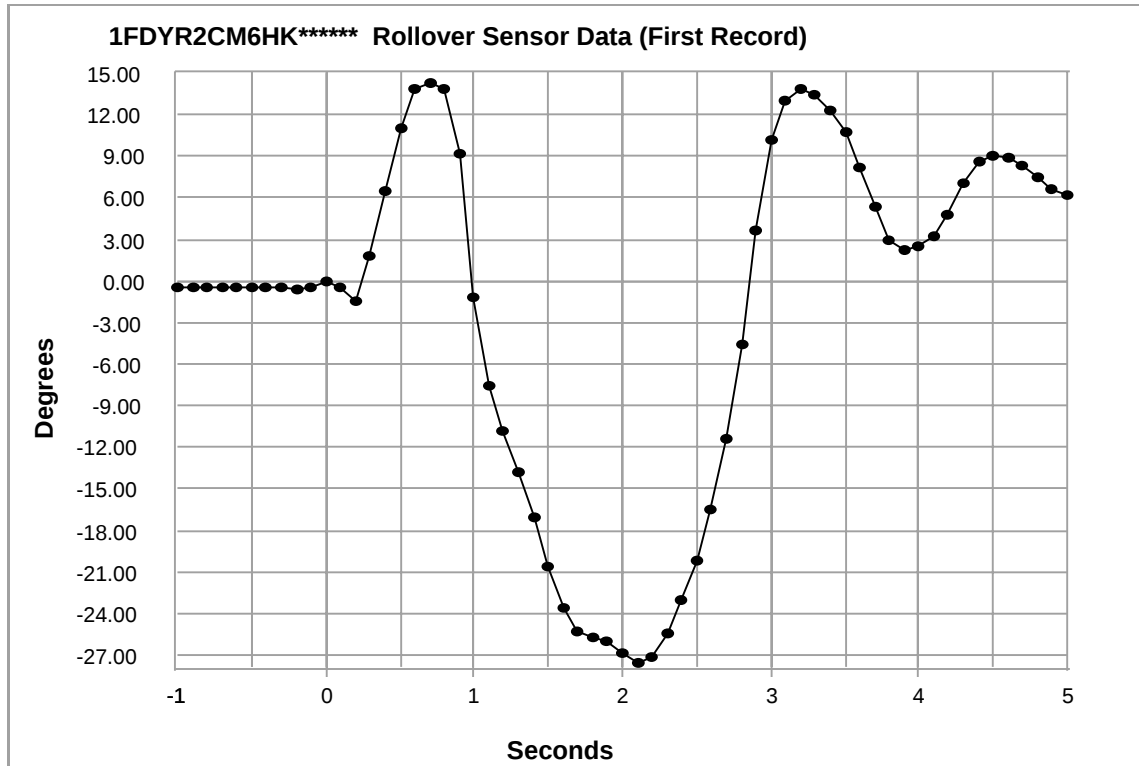
Longitudinal Crash Pulse (First Record)

Time (msec)	Delta-V, longitudinal (MPH)	Delta-V, longitudinal (km/h)
5.0	-0.75	-1.20
15.0	-2.65	-4.26
25.0	-5.53	-8.89
35.0	-9.09	-14.63
45.0	-15.63	-25.16
55.0	-22.04	-35.47
65.0	-27.50	-44.26
75.0	-31.26	-50.31
85.0	-34.34	-55.27
95.0	-36.65	-58.98
105.0	-38.05	-61.24
115.0	-39.14	-62.98
125.0	-40.10	-64.54
135.0	-41.67	-67.06
145.0	-43.10	-69.36
155.0	-44.51	-71.64
165.0	-45.63	-73.44
175.0	-46.72	-75.20
185.0	-47.65	-76.68
195.0	-48.36	-77.83
205.0	-48.98	-78.82
215.0	-49.26	-79.27
225.0	-49.53	-79.70
235.0	-49.82	-80.17
245.0	-49.96	-80.41
255.0	-50.13	-80.68



Lateral Crash Pulse (First Record)

Time (msec)	Delta-V, lateral (MPH)	Delta-V, lateral (km/h)
5.0	-0.09	-0.14
15.0	0.41	0.65
25.0	0.14	0.22
35.0	0.47	0.75
45.0	-0.35	-0.57
55.0	-0.94	-1.52
65.0	-1.31	-2.11
75.0	-0.60	-0.96
85.0	0.70	1.12
95.0	2.00	3.21
105.0	3.97	6.39
115.0	5.69	9.15
125.0	7.09	11.42
135.0	8.31	13.37
145.0	9.44	15.19
155.0	10.67	17.17
165.0	11.48	18.47
175.0	11.92	19.19
185.0	11.88	19.12
195.0	11.39	18.34
205.0	10.87	17.49
215.0	10.07	16.20
225.0	9.49	15.27
235.0	8.81	14.18
245.0	8.34	13.42
255.0	8.05	12.95



Rollover Sensor Data (First Record)

Time (sec)	Vehicle Roll Angle (deg)
-1.0	-0.48
-0.9	-0.52
-0.8	-0.52
-0.7	-0.52
-0.6	-0.52
-0.5	-0.52
-0.4	-0.52
-0.3	-0.52
-0.2	-0.57
-0.1	-0.5
0.0	-0.02
0.1	-0.43
0.2	-1.41
0.3	1.83
0.4	6.48
0.5	11.08
0.6	13.81
0.7	14.28
0.8	13.81
0.9	9.14
1.0	-1.15

Time (sec)	Vehicle Roll Angle (deg)
1.1	-7.62
1.2	-10.76
1.3	-13.82
1.4	-17.14
1.5	-20.65
1.6	-23.57
1.7	-25.33
1.8	-25.67
1.9	-26.08
2.0	-26.93
2.1	-27.56
2.2	-27.1
2.3	-25.41
2.4	-23.06
2.5	-20.18
2.6	-16.46
2.7	-11.38
2.8	-4.56
2.9	3.63
3.0	10.11
3.1	13.07

Time (sec)	Vehicle Roll Angle (deg)
3.2	13.82
3.3	13.41
3.4	12.36
3.5	10.71
3.6	8.2
3.7	5.36
3.8	2.97
3.9	2.24
4.0	2.46
4.1	3.18
4.2	4.71
4.3	7.0
4.4	8.6
4.5	9.0
4.6	8.91
4.7	8.36
4.8	7.44
4.9	6.57
5.0	6.25

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

43 4B 34 54 2D 31 34 42 33 32 31 2D 43 47 00 00 00 00 00 00 00 00 00 00

37 30 33 39 37 38 32 34 33 30 32 35 30 30 30 30

42 4B 32 54 2D 31 34 43 30 32 38 2D 42 41 00 00 00 00 00 00 00 00 00 00

00 06 2A 6A 45 4E 77 00 00 00 00 00 00 00 00 00

00 00 00 82 15 03 42 00 00 00 00 00 00 00 00 00

00 1A 2A 6A 44 62 77 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 06 11 40 62 00 00 00 00 00 00 00 00 00

00 28 2A 70 C7 5C 67 00 00 00 00 00 00 00 00 00

31 46 44 59 52 32 43 4D 36 48 4B 2A 2A 2A 2A 2A 2A

31 46 44 59 52 32 43 4D 36 48 4B 2A 2A 2A 2A 2A 2A 00 00 00 00 00 00 00

53 68 C0 30 10 0C 65 00

26	01	00	00	27	01	00	00	EC	57	02	00	49	00	00	00	7E	B0	00	00	B4	29	00	00	0C	21	00
00	7E	C8	FF	FF	18	08	00	00	8E	E1	FF	FF	28	E8	FF	FF	2C	F2	FF	FF	92	FE	FF	FF	54	15
00	00	9C	2B	00	00	9A	3E	00	00	AA	4B	00	00	62	56	00	00	6A	5E	00	00	4A	63	00	00	10
67	00	00	6C	6A	00	00	DE	6F	00	00	D6	74	00	00	C2	79	00	00	A6	7D	00	00	74	81	00	00
AA	84	00	00	24	87	00	00	48	89	00	00	44	8A	00	00	32	8B	00	00	34	8C	00	00	B8	8C	00
00	50	8D	00	00	36	37	00	00	EC	38	00	00	FE	37	00	00	22	39	00	00	48	36	00	00	3A	34
00	00	F0	32	00	00	6E	35	00	00	EE	39	00	00	74	3E	00	00	52	45	00	00	48	4B	00	00	2E
50	00	00	66	54	00	00	58	58	00	00	9E	5C	00	00	6C	5F	00	00	F8	60	00	00	D6	60	00	00
22	5F	00	00	00	4C	5D	00	00	84	5A	00	00	82	58	00	00	28	56	00	00	82	54	00	00	7E	53
00	86	B1	54	BA	AA	C5	2F	D5	FE	E9	FE	02	C6	16	CC	1F	12	22	D2	20	A1	1D	97	18	ED	10
47	08	F5	00	C1	FE	66	FF	9C	01	49	06	44	0D	27	12	5D	13	18	13	6D	11	9C	0E	F2	0B	FC
0A	73	F6	54	F6	54	F6	54	F6	54	F6	54	F6	54	F6	54	F6	29	F6	60	F6	D7	F7	9A	F6	9E	F3
7B	FD	B0	0B	BC	19	0B	22	7B	23	0A	22	C9	13	64	F4	A9	E0	0F	D7	BD	CD	9C	C3	E7	B8	FB
AF	9D	AA	92	A9	54	A8	B7	A5	C9	A3	36	A5	5C	AA	83	80	C3	80	59	81	7F	80	C0	01	2A	01
8D	80	93	80	93	80	9C	80	B6	80	BF	80	C1	80	BC	80	BF	80	B8	80	BC	80	C5	80	CC	80	D1
80	D1	80	CF	80	D1	80	D3	80	E8	80	EC	80	EA	80	E3	80	EC	80	EA	80	EA	80	E5	80	DA	80
D3	80	CF	80	BF	80	AC	80	88	80	7F	80	81	80	81	80	86	80	83	80	81	80	7F	80	7A	80	74
80	74	80	6D	80	6F	80	71	80	F6	07	E1	07	E2	07	DF	07	C0	07	77	06	CF	07	C4	07	C1	07
DB	07	C1	07	BD	07	BF	07	CF	07	C4	07	B5	07	D2	07	C8	07	CA	07	B6	07	D6	07	CB	07	C4
07	C0	07	C9	07	D3	07	C6	07	D0	07	D6	07	E2	07	D3	07	D9	07	CB	07	E2	07	DB	07	D6	07
D9	07	DF	07	C7	07	CD	07	BE	07	CA	07	C5	07	E1	07	D9	07	F2	07	E8	07	F6	07	E8	07	DC
07	F2	07	C3	07	B4	07	8B	07	87	07	71	08	38	08	C0	07	B5	07	B4	07	B1	07	AF	07	97	07
A9	07	A6																								



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Disclaimer of Liability

The users of the CDR product and reviewers of the CDR reports and exported data shall ensure that data and information supplied is applicable to the vehicle, vehicle's system(s) and the vehicle ECU. Robert Bosch LLC and all its directors, officers, employees and members shall not be liable for damages arising out of or related to incorrect, incomplete or misinterpreted software and/or data. Robert Bosch LLC expressly excludes all liability for incidental, consequential, special or punitive damages arising from or related to the CDR data, CDR software or use thereof.

Appendix B: 2014 RAM 2500 HD Event Data Recorder Report

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	3C6UR5CL3EG*****
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	CR18032_V2_ACM.CDRX
Saved on	Tuesday, November 13 2018 at 12:00:55
Imaged with CDR version	Crash Data Retrieval Tool 17.9.1
Imaged with Software Licensed to (Company Name)	NHTSA
Reported with CDR version	Crash Data Retrieval Tool 19.5
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
Event(s) recovered	Most Recent Event 1st Prior Event

Comments

No comments entered.

Data Limitations

AIRBAG CONTROL MODULE (ACM) DATA LIMITATIONS:

GENERAL INFORMATION:

CAUTION: During direct-to-module imaging where the Airbag Control Module (ACM) is disconnected and removed from a vehicle, make sure the ACM is not moved, tilted or turned over while connected to and powered by the CDR Interface Module (with appropriate adaptors in place, where required). Also, after a CDR imaging process, wait 2 minutes after power is removed from the ACM before attempting to move the module. Not following these general ACM guidelines for direct-to-module imaging may cause new events to be recorded in the ACM.

- For additional definitions, please refer to the CDR Help File Glossary.
- As the VIN may be used to determine the configuration of the restraint system, it is imperative that the correct VIN be entered into the CDR Tool during the imaging process.
- If a DLC adapter has to be used with the CDR Tool, the "Read VIN from Vehicle" feature in the CDR Tool will not work. The VIN will have to be manually entered.
- If a 2021 or later MY Dodge Durango was imaged with a CDR Tool version 19.4 or older, the ACM will need to be reimaged as not all the peripheral sensor data will have been retrieved.
- The 2019 MY RAM 1500 may take up to 30 minutes to retrieve the EDR data. The ignition will time out within 20 minutes so the vehicle flashers must be turned on within 20 minutes to keep the ignition and communication bus active.
- Lateral Delta V will not be displayed for the 2013 MY Jeep Compass and Patriot.
- Ignition Cycle, download/crash
 - For RAMs and Dodge Vipers, there are 2 internal ignition counters in the ACM. It is possible for the ignition cycles at download to be different than the ignition cycles at event due to the 2 different counters.
 - Note that the ignition cycle count in an ACM may differ from the ignition cycle count in a Pedestrian Protection Module (PPM) in the same vehicle due to the fact that the ACM has an energy reserve while the PPM does not.

The following table provides an explanation of the sign notation for data elements that may be included in this CDR report. All directional references to sign notation are from the perspective of the driver when seated in the vehicle facing the direction of forward vehicle travel.

Data Element Name	Positive Sign Notation Indicates
Delta-V, Longitudinal	Forward
Maximum Delta-V, Longitudinal	Forward
Delta-V, Lateral	Left to Right
Maximum Delta-V, Lateral	Left to Right

Angular Rate	Clockwise rotation around the longitudinal axis
Peripheral Sensors, X and Y	Outside to Inside
Pressure Sensors	Compression of air
Internal Y Acceleration	Left to Right
Low-g Z Acceleration	Downward
Steering Input	Steering wheel turned counter clockwise
Yaw Rate	Counter clockwise rotation

CDR FILE INFORMATION:

- An event will be stored when the delta V is approximately 5 mph (8 km/h) or greater within a 150 ms interval.
- For non-NAFTA ACMs that control pedestrian protection devices, a non-deployment event will be stored when the pedestrian protection devices are activated.
- A non-deployment event may be stored with activation of the Active Head Restraints. See AHR explanation under System Configuration at Retrieval/Event section.

Event(s) Recovered definitions:

- None - There are no stored events in the ACM
- Not Retrievable - Event Data may be stored in the ACM but is not retrievable by the CDR Tool.
- Most Recent Event - Data of the most recent event is displayed in the report
- 1st Prior Event - Two events are stored in the ACM, Data displayed is of the first prior event.
- 2nd Prior Event - Three events are stored in the ACM, Data displayed is of the second prior event.
- For 2013 and 2014 MY Dodge Journey and Fiat Freemont:
 - Event Record 1 - Data from an event is stored in the ACM (not necessarily in chronological order)
 - Event Record 2 - Data from another event is stored in the ACM (not necessarily in chronological order)
- For TRW modules:
 - If there is a side impact, two EDR events may be stored for the one side impact event. The second event may be recorded due to the Lateral Delta V exceeding 5 mph (8 km/h) within a 150 ms interval after the side deployment occurred.
- For some Fiat vehicles:
 - Two EDR events may be stored for one impact event. The second event may be recorded due to the deployment of the frontal airbag, 3rd stage passenger.
- During an event, if power to the ACM is lost, all or part of the event data record may not be recorded. An indication may be observed in the recorded data under this condition: The restraint data is recorded first and then the vehicle data.
 - "None" may be displayed in the "Event(s) Recovered" section of the report indicating no pre-crash vehicle data.
 - An event may be displayed in the "Event(s) Recovered" section of the report and "Interrupted" will be displayed for Pre-Crash Recorder Status.

SYSTEM STATUS AT RETRIEVAL:

- Original VIN - The VIN is captured by the ACM and then recorded as the Original VIN after 10 consecutive ignition cycles of capturing the same number. Once it has been recorded, this number cannot be changed.

SYSTEM CONFIGURATION AT RETRIEVAL/EVENT:

- The System Configuration data tables indicate the components that the ACM for a particular vehicle monitors and/or controls.
- Active Head Restraint (AHR) - This refers to some active head restraint systems that are electronically controlled by the ACM. AHRs may activate but not store an EDR Record if the delta V does not exceed the minimum delta V threshold. It is possible that the AHRs may activate after the EDR record has been stored and written, based on achieving the minimum delta V. This condition will result in an EDR but no record of the AHR activation in the CDR report. Activation of only the AHRs, if stored, will be a non-deployment event.

SYSTEM STATUS AT EVENT:

- Number, Total Events - Cumulative number of events that the ACM has recorded, including those non-deployment events that have been overwritten by a subsequent event.
- Occupant Size Classification, Outboard Front Passenger - "Child" status may be used to indicate anything weighing less than a 5th percentile female adult crash dummy, including an empty seat; "Not Child" indicates anything weighing the same as or more than a 5th percentile female adult crash dummy.
- Odometer at Event - Vehicle odometer at the time of the event
- Operation via Energy Reserve Only - "Yes" indicates that the ACM had lost power at or before T0 and was only operating on energy reserve

at T0.

- Safety Belt Status, Outboard Front Passenger - For vehicles sold outside of North America which do not contain a buckle switch for the outboard front passenger, the safety belt status, outboard front passenger will default to "not buckled/unbuckled".
- System Voltage at Event, ACM - Voltage at the ACM as measured by the ACM.
- System Voltage at Event, Bused - Voltage of the vehicle system, communicated on the communication bus to other electronic modules in the vehicle.
- Temperature, Outside - Ambient Air Temperature.
- Time, Airbag Warning Lamp On - This is a cumulative time. It indicates the total amount of time that the ACM has requested the Airbag Warning Lamp be turned on.
 - This time does not include the warning lamp bulb check time, which occurs at every ignition cycle
 - For 2013 MY Minivans and new 2017+ MY Jeep Compass, this time is only cumulative for the past 10 ignition cycles.
- Time from event 1 to 2 -
 - If only one event is stored, either a value of 0 or >5 may be displayed for this data element.
 - For the 2018+ MY Promaster and 2019+ MY RAM 1500, a value of 0 may be displayed for the first event or for events >5 seconds apart.
 - If multiple events exist in the EDR, the time from event 1 to event 2 is defined as:
 - For Bosch and TRW modules, the time from the prior recorded event (even if it has been overwritten) to the current recorded event.
 - For Continental modules, the time from the prior existing recorded event (as long as it is still displayed in the CDR report) to the current recorded event. If the prior event in a multi-event condition is overwritten by a subsequent event, the multi-event status will no longer be displayed.
 - For the 2019+ MY RAM 1500, the time from event 1 to 2 may utilize a non-stored event as event 1. In this case, the total number of events and multi-event data elements will not include the non-stored event in the number of events. However, the time from event 1 to 2 will be shown as time from that non-stored event.
- Time, Operation System Time - This is a cumulative lifetime timer for the ACM. It indicates the total amount of time the ACM has been powered up.
 - For 2019 and later MY RAMs, this time is only cumulative for the current ignition cycle.
- VIN at Event, Last 8 Digits- Last 8 digits of the VIN of the vehicle at the time the ACM records the event.

DEPLOYMENT COMMAND DATA:

- A "Yes" for a particular item indicates that the ACM commanded the deployment /activation of the associated device.
- The phrase "Exceeded Storage Range" for a particular time to deploy indicates that the deployment time is equal to or greater than the 255 milliseconds that can be stored.
- If a device is not deployed, the "time to deploy" for that device will display 0, SNA, N/A or 255.
- In vehicles with Bosch ACMS, once a device has been deployed in an ignition cycle, it is possible that the ACM will not attempt to re-deploy any already deployed device during subsequent events in that same ignition cycle.

DTCs PRESENT AT START OF EVENT:

- If any DTCs (diagnostic trouble codes) are present in the ACM at the start of the event, these will be listed in this section. A dealership service manual can be used to decode the DTCs.
 - DTCs Present at Start of Event are not present in the Alfa Romeo Giulia, Fiat 500X, and the Jeep Renegade.

SENSOR DATA:

- The design range for the angular rate data is:
 - +/- 240 deg/sec for Bosch ACMS, unless specifically called out below
 - +/- 300 deg/sec for TRW ACMS, the 2019 MY RAM 1500, and the 2018+ MY Dodge Journey
 - +/- 290 deg/sec for 2008+ MY minivans and 2009-2017 MY Dodge Journey
 - +/- 340 deg/sec for 2017+ MY Chrysler Pacifica and new 2017+ MY Jeep Compass
 - -416.67 deg/sec to +413.41 deg/sec for 2014+ MY Jeep Cherokee
- For vehicles that store peripheral sensor data, t0 for the peripheral sensors is the same as the t0 for the delta V.
- Internal y acceleration is stored prior to t0 so the internal y acceleration data will usually be zero unless the rollover sensing algorithm has triggered storage of the EDR event.
- The words "Sensor Design Range Exceeded" and a vertical line will be displayed on the Longitudinal and Lateral Delta-V graphs the first time the applicable sensor range is exceeded.

PRE-CRASH DATA:

- The recorded Event may contain Pre-Crash data. Pre-Crash data from the various electronic control modules in the vehicle is transmitted to the Airbag Control Module via the vehicle's communication bus.
- In the Pre-Crash Data graph, data transmitted at a rate other than 0.1 seconds will be shown as dots for each available data point. Only data transmitted at a rate of 0.1 seconds will have the dots connected by a line.
(if equip.) - If a parameter name is followed by the words (if equip.), then the parameter is only valid for vehicles equipped with the associated

parameter/vehicle system.

- The MIL (Malfunction Indicator Lamp) Status for the various recorded systems indicates the requested state of the applicable malfunction indicator lamp at the time that the data was captured. Note: Some fault codes could be stored due to component/system damage from the accident. The appropriate diagnostic tool should be used to read any stored Diagnostic Trouble Codes (DTC's) in the various electronic modules (ACM, PCM, ABS, TCM, etc., where applicable) for use in interpretation of some vehicle specific recorded data.
- ABS Activity - "Yes" indicates an active ABS event in which the ABS is actively controlling the brakes.
- ABS MIL- This indicates the ABS fault indicator lamp status. It will only be "On" when there is a fault in the ABS system. The Electronic brake module DTC's should be read and recorded for final system interpretation.
- Accelerator Pedal, % Full - This indicates the actual position of the accelerator pedal. It will be "SNA" if the vehicle is in the power free mode which limits acceleration.
- Accelerator Pedal (Derived), % Full - This indicates the calculated value of the accelerator pedal for battery electric vehicles only.
- Accelerator Pedal/Engine Throttle, % Full - This indicates the actual position of the accelerator pedal unless the cruise control is engaged. If the cruise control is engaged, this indicates the actual position of the engine throttle blade.
- Braking System, Maximum Braking -- "Yes" indicates that ABS is active on all 4 wheels at the same time.
- Cruise Control:
 - Note that the following two Cruise Control data elements are only valid for vehicles not equipped with Adaptive Cruise Control (ACC). For vehicles equipped with ACC, the ACC data elements are used for both regular Cruise Control and ACC.
 - Cruise Control System/Lamp Status - "On" indicates that the Cruise Control system is turned on.
 - Cruise Control Engaged Status/Active - "Engaged"/"Yes" indicates the Cruise Control system is actively controlling vehicle speed. "Not Engaged"/"No" indicates the system is NOT controlling vehicle speed.
 - Adaptive Cruise Control (ACC) Status (if equip.)- "Off" indicates that all cruise control functionality is disabled; "NCC_On" indicates that the Normal Cruise Control system is turned on; "NCC_Set" indicates the Normal Cruise Control is actively controlling vehicle speed; "ACC_On" indicates that ACC is turned on; "ACC_Set" indicates that the ACC is actively controlling vehicle speed. If the value is SNA for all time stamps, then the vehicle is not equipped with ACC.
 - ACC Speed Set (if equip.)- This indicates the desired speed in mph that was input by the driver for the ACC system. If the value is SNA for all time stamps, then the vehicle is not equipped with ACC.
 - ACC Faulted - "Yes" indicates that the ACC system will not function and the ACC warning lamp is lit; "No" indicates that the ACC system is functional and the ACC warning lamp is off;
 - For new 2017+ MY Jeep Compass, cruise control data elements are only available for vehicles NOT equipped with ACC.
- Drive Mode - This indicates the driver selected mode of operation (e.g. normal, sport, track, ...)
- Electronic Brake/Stability Control information:
 - Stability Control - This is the status of the ESC symbol - "car with squiggly lines" indicator lamp. "On" indicates that the ESC system is functional. "Off" indicates that the ESC system was turned off either by the driver or due to a fault or thermal mode shutdown. "Engaged" indicates an active ESC/TCS event. "Partial Off" indicates that engine management has been turned off but brake traction control is still functional.
 - For the Jeep Renegade, if the Stability Control is "Off", the ESC Button Status is "Disabled", and the vehicle speed exceeds 40 mph, the stability control system will operate in a reduced functionality mode with traction control turned off ("partial off" mode) even though the user disabled it. For all other conditions, when the Stability Control is "Off", the stability control system will be off.
 - ESC Button Status - This indicates the driver selected mode for the ESC system. "Disabled" indicates that the driver pressed the ESC Button to disable engine management. "Enabled" is the default state for the ESC system.
 - SRT and some Fiat products have the ability to fully disable the ESC system if the ESC button has been pressed and held for a specific amount of time. Additional system analysis is required.
 - ESP Feature is Completely Disabled - This indicates that the stability control system has turned off engine management, traction control, and stability control.
 - ESC/ESP MIL - This indicates the ESC/ESP fault indication lamp status. It will only be "On" when there is a fault or thermal mode shutdown in the ESC/ESP system. The ESC/ESP module DTC's should be read and recorded for final system interpretation.
 - Brake Intervention by ESP - "Yes" indicates that the stability control system has engaged the brakes.
 - Engine Torque Applied - "No" indicates no engine torque output was applied (as in Park/Neutral for Automatic transmissions or clutch depressed on manual or during an ESP/Traction Control event). If "Yes", then engine torque output was applied.
 - Traction Control Active - "Yes" indicates that the traction control system is actively controlling the vehicle's wheels.
- Electronic Park Brake (EPB):
 - Park Brake Engaged - "Yes" indicates that the park brake is applied.
 - EPB MIL - "On" indicates that there is a fault in the Electronic Park Brake System.
- Engine RPM - For the RAM ProMaster City, the minimum resolution for Engine RPM is 32 rpm.
- Engine Throttle, % Full - This indicates the actual position of the Engine Throttle blade. This data element is not supported by vehicles with diesel engines. Thus a value of "SNA" will be displayed if the vehicle has a diesel engine.
- ETC Lamp - Lamp "ON" indicates there is an active Electronic Throttle DTC.
- ETC Lamp Flashing - "Yes" indicates that the ETC is in the limp-in mode.
- Forward Collision Warning (FCW) (if equip.):
 - Object of Interest Distance - This indicates the actual forward distance to the main object being tracked by the FCW system. "FCW present but not tracking" indicates that the FCW system is not currently tracking an object. If the value is SNA for all time stamps, then the vehicle is not equipped with FCW.
 - FCW System Operating State - "Off" indicates that the FCW system is off and the FCW Warning Lamp will be "On"; "On" indicates that the FCW system is fully on with active braking as well as the audible and visual warnings enabled.
 - FCW System Status - "Off" indicates that the FCW system is off and the FCW Warning Lamp will be "On". "On-braking" indicates that the FCW system is on with active braking enabled but there will be no FCW audible or visual warnings in an FCW event. "On-warning" indicates that the FCW system is on but active braking is disabled. In an FCW event, the driver will only receive FCW audible and

visual warnings. "On-full" indicates that the FCW system is fully on with active braking as well as the audible and visual warnings enabled. SNA indicates that the vehicle is not equipped with FCW.

- Gear Position - For all vehicles except the RAM ProMaster City, this indicates the current transmission gear.
 - For the RAM ProMaster City, this indicates the status of the gear shift lever.
- Master Cylinder Pressure - This indicates the brake pressure applied to the brakes through the brake pedal.
- PCM MIL - This indicates the PCM fault indicator lamp status. It will only be "On" when there is a fault in the PCM. "Flashing" indicates misfire detection. The Powertrain Control Module DTC's should be read and recorded for final system interpretation.
- Pre-Crash Recorder Complete - Due to the interruption of data recording in one section, this data element may display "Interrupted" for all sections when some data sections are actually complete.
 - For the 2014 MY Jeep Grand Cherokee and Dodge Durango, if recording of angular rate data is interrupted, the entire EDR record will display "Interrupted" even though the rest of the data may be complete.
- PRND/PRNDL/PRNDS Status - This indicates the status of the Shifter Position.
- Raw Manifold Pressure - This indicates engine load in kPa.
- Reverse Gear - For manual transmission vehicles only, "Yes" indicates the transmission is in the reverse gear.
- Service Brake - "On" indicates that the brake pedal is physically depressed. Braking from the ABS or FCW systems will not be reported in this data element.
- Speed, Vehicle Indicated - This indicates the average of the wheel speeds of the drive wheels.
 - The reporting resolution for Speed, Vehicle Indicated is 1 km/h.
 - To display this data element in mph, the CDR Tool converts the km/h to mph and reports a rounded value in mph.
 - The accuracy of the recorded Speed, Vehicle Indicated may be affected by a significant change of the tire size for the drive wheels or the final drive axle ratio of the transmission from the factory build specifications, wheel lockup, wheel slip, or wheel spin.
 - On some vehicles capable of speeds in excess of 255km/h (about 158mph), the actual vehicle speed may have exceeded the reporting range. It is always prudent to check the reported wheel speeds and other parameters to confirm the Speed, Vehicle Indicated value(s).
- Tire Information:
 - XX where LF = Left Front Tire, RF = Right Front Tire, LR = Left Rear Tire, and RR = Right Rear Tire.
 - Tire X Location - This indicates the location of the tire pressure sensor data being displayed for that time stamp. Default is used to indicate that the location of the tire pressure sensor is unknown or there is no tire pressure sensor in that wheel. Vehicles with Base Tire Pressure Monitoring systems will display SNA for both Tire Locations as these vehicles do not send actual pressure values across the communication bus.
 - Tire X Pressure/Tire Pressure Status, XX - This indicates the actual pressure status of the Tire Location defined in the previous column (Tire X Location) or by the values for XX. Possible values are LOW, NORMAL, HIGH, or SNA for this parameter. Vehicles with Base Tire Pressure Monitoring systems may display NORMAL even though these vehicles do not send actual pressure values across the communication bus.
 - Tire X Pressure/Tire Pressure Value, XX (psi) - This indicates the actual tire pressure value of the Tire Location defined in the previous column (Tire X Location) or by the values for XX. Vehicles with Base Tire Pressure Monitoring systems will display N/A for this parameter as these vehicles do not send actual pressure values across the communication bus.
 - For the following vehicles, the tire location, if displayed, may not be accurate if the tires have been rotated:
 - 2013 MY Ram
 - 2013-2017 MY Jeep Patriot
 - 2013-2014 MY Chrysler 200
 - 2013-2017 MY Jeep Compass
 - 2013-2016 MY Dodge Dart
 - For the 2013 MY Ram, if the values for tire pressure status and the tire pressure are SNA, the EDR does not store tire pressure monitoring data.
 - Tire pressure is not stored in the EDR for the following vehicles:
 - 2014-2018 MY RAM 1500
 - 2014+ MY RAM (all but 1500)
 - 2013+ MY Jeep Wrangler
 - 2013 MY Jeep Grand Cherokee
 - 2013 MY Dodge Durango
 - 2013-2014 MY Dodge Challenger
 - 2013-2016 MY Chrysler Town and Country
 - 2013+ MY Dodge Grand Caravan
 - 2015+ MY Fiat 500
 - Wheel Speed, XX - This indicates the speed value of a particular tire as denoted by XX.
- Tire Pressure Monitor Indicator Lamp/Faults - "On" indicates a fault in the tire pressure monitoring system. The TPM module DTC's should be read and recorded for final system interpretation.
- "T0" ("Time zero" where '0' is seen as subscript) is defined as "beginning of the crash event". T0 is the time at which the ACM algorithm is activated, a specific Delta-V is exceeded, or a non-reversible restraint device is deployed. T0 may be defined differently for front, side, rear and roll-over events.
 - If multiple algorithm decisions (i.e.: frontal, side, rear and/or rollover) are made before the first recorded event ends, all of those events are part of the same event record and "T0" is defined as the "T0" from the first recorded event.
 - In the Pre-Crash data tables, the relative time marker "-0.1s" or "-0.25s" respectively represents the last set of data captured in the buffer prior to "T0."
- Torque Information:
 - Axle Torque - This indicates the E-Motor Torque multiplied by the gear ratio for battery electric vehicles only.
 - E-Motor Torque - This indicates the calculated torque from the output shaft of the electric motor in battery electric vehicles only.
- Traction Control Intervention Active - "Active" indicates wheel slippage was occurring during vehicle acceleration.

APPLICATION INFORMATION:

- Alfa Romeo Giulia, Alfa Romeo Stelvio, Fiat 500L, Fiat 500X, and Jeep Renegade are only CDR supported in the United States, Canada, and Saudi Arabia markets.
- Fiat 500/500e is only CDR supported in the United States, Canada, Mexico, and Brazil markets.

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System Status at Retrieval

Original VIN	3C6UR5CL3EG*****
Ignition Cycle, Download	12440
ACM Part Number	68263739AA
ECU Serial Number	T52MD267300443
ACM Supplier	Bosch
ECU Supply Voltage at Time of Retrieval	11.5

System Configuration at Retrieval

Configured for Driver Frontal Airbag	Yes
Configured for Passenger Airbag	Yes
Configured for Driver Retractor Pretensioner	Yes
Configured for Passenger Retractor Pretensioner	Yes
Configured for Left Side Curtain Airbag	Yes
Configured for Right Side Curtain Airbag	Yes
Configured for Front Left Seat Airbags	Yes
Configured for Front Right Seat Airbag	Yes
Configured for Safety Belt Status, Driver	Yes
Configured for Safety Belt Status, Outboard Front Passenger	No
Configured for Seat Track Position Switch, Foremost, Status, Driver	No
Configured for Seat Track Position Switch, Foremost, Status, Outboard Front Passenger	No
Configured for Rollover Sensing	Yes

System Configuration at Event (Most Recent Event)

Configured for Driver Frontal Airbag	Yes
Configured for Passenger Airbag	Yes
Configured for Driver Retractor Pretensioner	Yes
Configured for Passenger Retractor Pretensioner	Yes
Configured for Left Side Curtain Airbag	Yes
Configured for Right Side Curtain Airbag	Yes
Configured for Front Left Seat Airbags	Yes
Configured for Front Right Seat Airbag	Yes
Configured for Safety Belt Status, Driver	Yes
Configured for Safety Belt Status, Outboard Front Passenger	No
Configured for Seat Track Position Switch, Foremost, Status, Driver	No
Configured for Seat Track Position Switch, Foremost, Status, Outboard Front Passenger	No
Configured for Rollover Sensing	Yes

System Status at Event (Most Recent Event)

Event Number	2
Multi-Event, Number of Events (1,2)	1
Total number of events	2
Time from Event 1 to 2 (Time since last event)(sec)	>5
Complete File Recorded (Yes, No)	Yes
Maximum Delta-V Longitudinal (MPH [km/h])	-32.9 [-53]
Time, Maximum Delta-V, Longitudinal (msec)	138
Maximum Delta-V Lateral (MPH [km/h])	-29.2 [-47]
Time, Maximum Delta-V, Lateral (msec)	108
Ignition Cycle, Crash	12438
Safety Belt Status, Driver	Buckled
Airbag Warning Lamp, On/Off	Off
Operation System Time (sec)	20491347
Airbag Warning Lamp On Time Before Event (min)	0
Supply Voltage at Event, ACM (V)	14.2
Operation via Energy Reserve	No
VIN at Event (last 8 digits)	EG*****
Odometer at Event (km [miles])	246407 [153110.4]

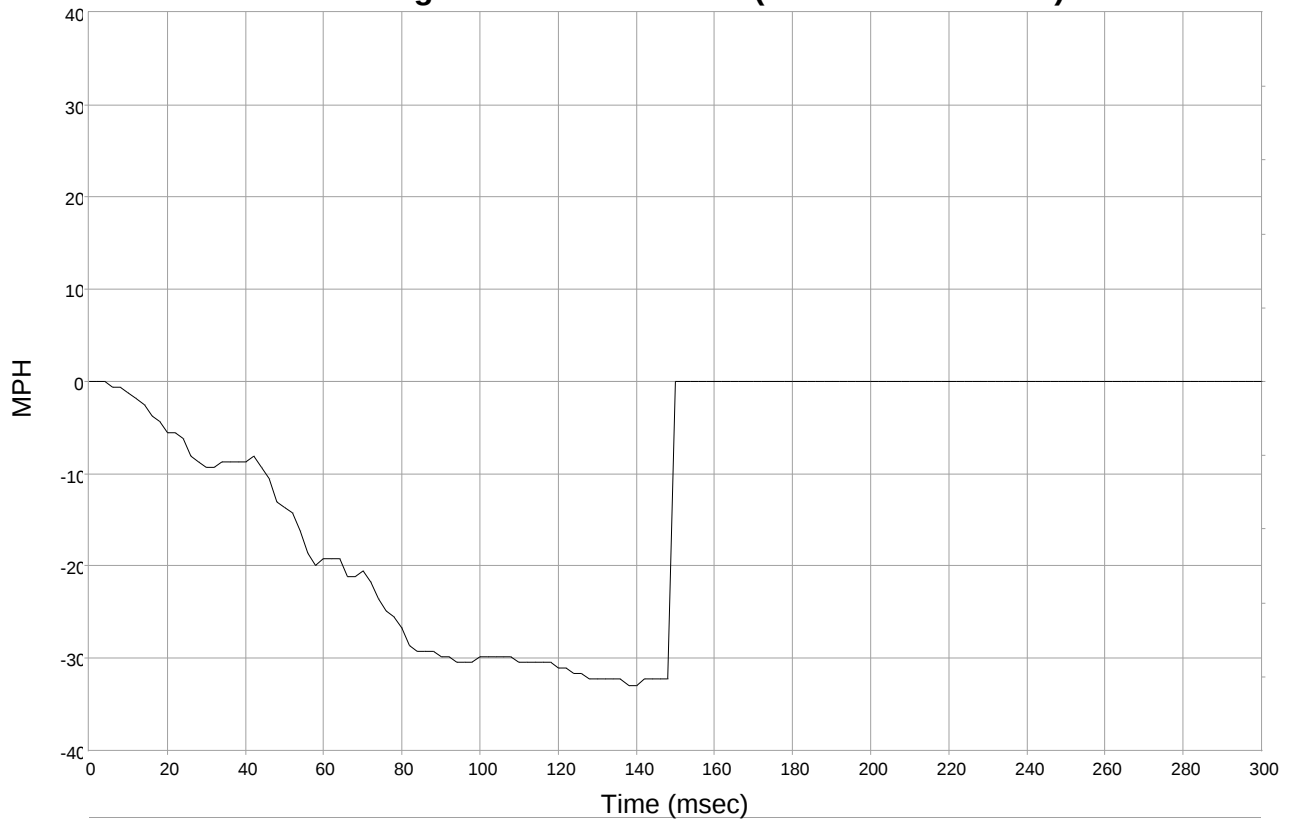
Deployment Command Data (Most Recent Event)

Driver Frontal Airbag Commanded	Yes
Driver Front Airbag, Time to 1st stage (msec)	14
Driver Front Airbag, Time to 2nd Stage from T0 (msec)	24
Passenger Frontal Airbag Commanded	Yes
Passenger Front Airbag, Time to 1st stage (msec)	14
Passenger Front Airbag, Time to 2nd Stage from T0 (msec)	24
Commanded Driver Retractor Pretensioner Deployment	Yes
Commanded Passenger Retractor Pretensioner Deployment	Yes
Commanded Left Side Curtain Airbag Deployment	No
Commanded Left Seat Airbag Deployment	No
Commanded Right Side Curtain Airbag Deployment	Yes
Commanded Front Right Side Seat Airbag Deployment	Yes

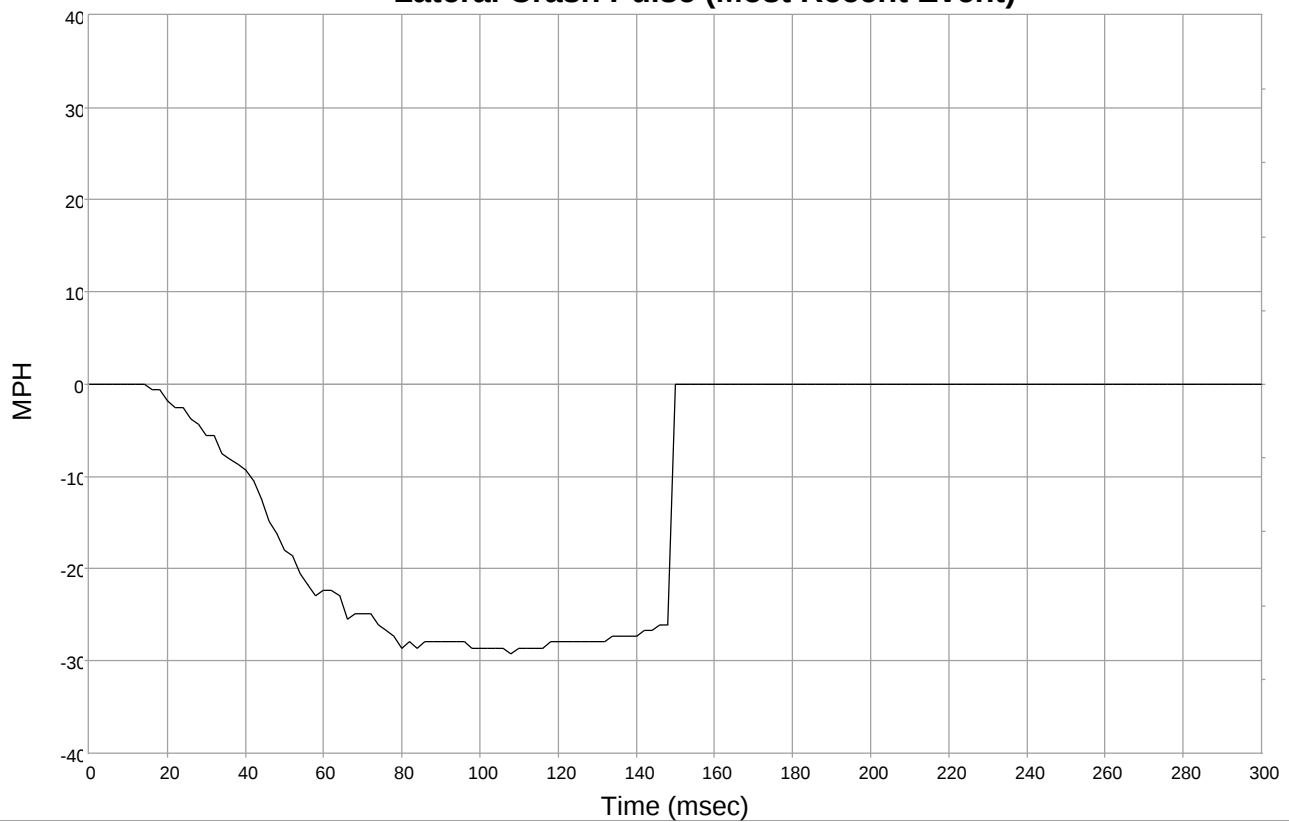
DTCs Present at Start of Event (Most Recent Event)

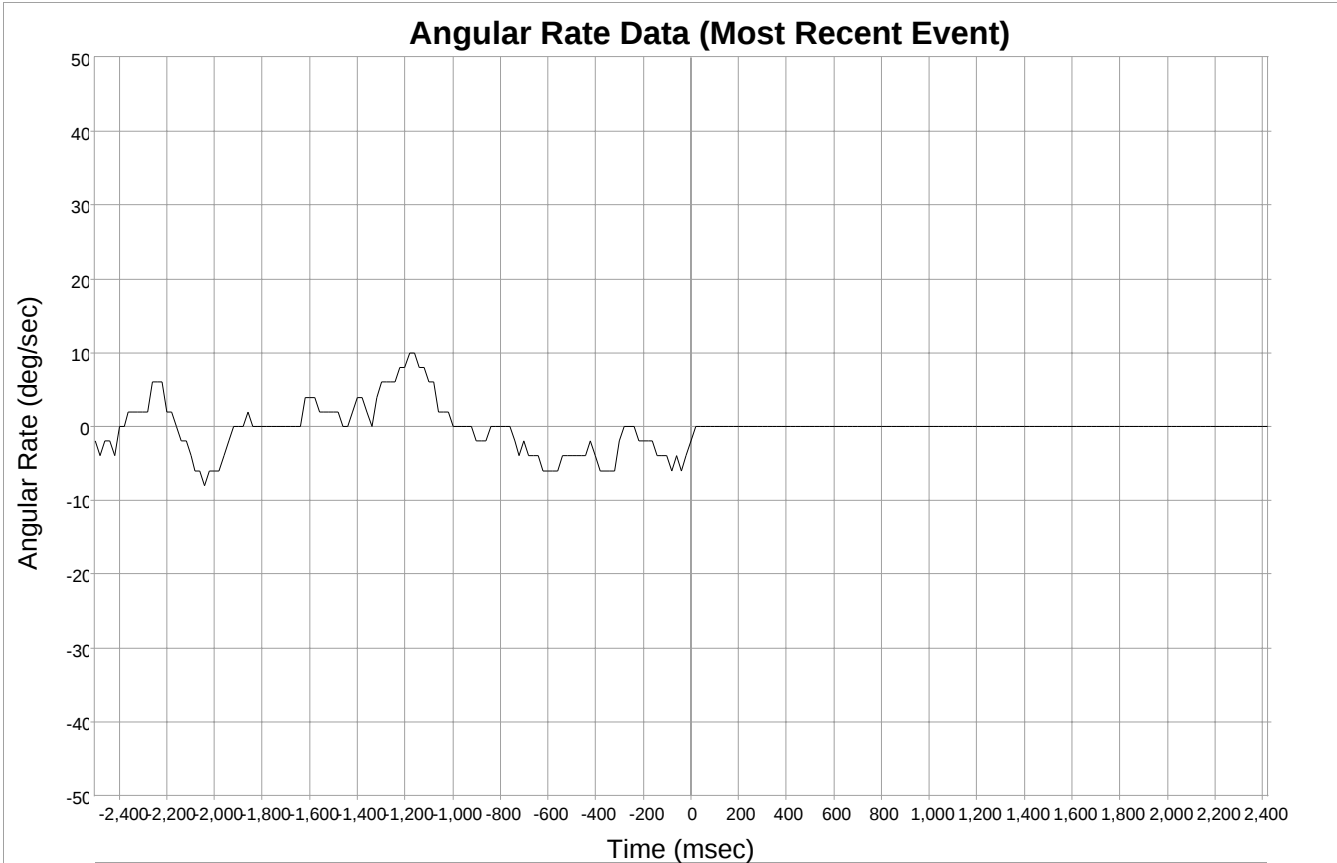
DTC Number	
B0020-13	Stored

Longitudinal Crash Pulse (Most Recent Event)



Lateral Crash Pulse (Most Recent Event)





Longitudinal Crash Pulse (Most Recent Event)

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
2	0.0 [0]
4	0.0 [0]
6	-0.6 [-1]
8	-0.6 [-1]
10	-1.2 [-2]
12	-1.9 [-3]
14	-2.5 [-4]
16	-3.7 [-6]
18	-4.3 [-7]
20	-5.6 [-9]
22	-5.6 [-9]
24	-6.2 [-10]
26	-8.1 [-13]
28	-8.7 [-14]
30	-9.3 [-15]
32	-9.3 [-15]
34	-8.7 [-14]
36	-8.7 [-14]
38	-8.7 [-14]
40	-8.7 [-14]
42	-8.1 [-13]
44	-9.3 [-15]
46	-10.6 [-17]
48	-13.0 [-21]
50	-13.7 [-22]
52	-14.3 [-23]
54	-16.2 [-26]
56	-18.6 [-30]
58	-19.9 [-32]
60	-19.3 [-31]
62	-19.3 [-31]
64	-19.3 [-31]
66	-21.1 [-34]
68	-21.1 [-34]
70	-20.5 [-33]
72	-21.7 [-35]
74	-23.6 [-38]
76	-24.9 [-40]
78	-25.5 [-41]
80	-26.7 [-43]
82	-28.6 [-46]
84	-29.2 [-47]
86	-29.2 [-47]
88	-29.2 [-47]
90	-29.8 [-48]
92	-29.8 [-48]
94	-30.4 [-49]
96	-30.4 [-49]
98	-30.4 [-49]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
100	-29.8 [-48]
102	-29.8 [-48]
104	-29.8 [-48]
106	-29.8 [-48]
108	-29.8 [-48]
110	-30.4 [-49]
112	-30.4 [-49]
114	-30.4 [-49]
116	-30.4 [-49]
118	-30.4 [-49]
120	-31.1 [-50]
122	-31.1 [-50]
124	-31.7 [-51]
126	-31.7 [-51]
128	-32.3 [-52]
130	-32.3 [-52]
132	-32.3 [-52]
134	-32.3 [-52]
136	-32.3 [-52]
138	-32.9 [-53]
140	-32.9 [-53]
142	-32.3 [-52]
144	-32.3 [-52]
146	-32.3 [-52]
148	-32.3 [-52]
150	0.0 [0]
152	0.0 [0]
154	0.0 [0]
156	0.0 [0]
158	0.0 [0]
160	0.0 [0]
162	0.0 [0]
164	0.0 [0]
166	0.0 [0]
168	0.0 [0]
170	0.0 [0]
172	0.0 [0]
174	0.0 [0]
176	0.0 [0]
178	0.0 [0]
180	0.0 [0]
182	0.0 [0]
184	0.0 [0]
186	0.0 [0]
188	0.0 [0]
190	0.0 [0]
192	0.0 [0]
194	0.0 [0]
196	0.0 [0]
198	0.0 [0]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
200	0.0 [0]
202	0.0 [0]
204	0.0 [0]
206	0.0 [0]
208	0.0 [0]
210	0.0 [0]
212	0.0 [0]
214	0.0 [0]
216	0.0 [0]
218	0.0 [0]
220	0.0 [0]
222	0.0 [0]
224	0.0 [0]
226	0.0 [0]
228	0.0 [0]
230	0.0 [0]
232	0.0 [0]
234	0.0 [0]
236	0.0 [0]
238	0.0 [0]
240	0.0 [0]
242	0.0 [0]
244	0.0 [0]
246	0.0 [0]
248	0.0 [0]
250	0.0 [0]
252	0.0 [0]
254	0.0 [0]
256	0.0 [0]
258	0.0 [0]
260	0.0 [0]
262	0.0 [0]
264	0.0 [0]
266	0.0 [0]
268	0.0 [0]
270	0.0 [0]
272	0.0 [0]
274	0.0 [0]
276	0.0 [0]
278	0.0 [0]
280	0.0 [0]
282	0.0 [0]
284	0.0 [0]
286	0.0 [0]
288	0.0 [0]
290	0.0 [0]
292	0.0 [0]
294	0.0 [0]
296	0.0 [0]
298	0.0 [0]
300	0.0 [0]

Lateral Crash Pulse (Most Recent Event)

Time (msec)	Delta-V, Lateral (MPH [km/h])
0	0.0 [0]
2	0.0 [0]
4	0.0 [0]
6	0.0 [0]
8	0.0 [0]
10	0.0 [0]
12	0.0 [0]
14	0.0 [0]
16	-0.6 [-1]
18	-0.6 [-1]
20	-1.9 [-3]
22	-2.5 [-4]
24	-2.5 [-4]
26	-3.7 [-6]
28	-4.3 [-7]
30	-5.6 [-9]
32	-5.6 [-9]
34	-7.5 [-12]
36	-8.1 [-13]
38	-8.7 [-14]
40	-9.3 [-15]
42	-10.6 [-17]
44	-12.4 [-20]
46	-14.9 [-24]
48	-16.2 [-26]
50	-18.0 [-29]
52	-18.6 [-30]
54	-20.5 [-33]
56	-21.7 [-35]
58	-23.0 [-37]
60	-22.4 [-36]
62	-22.4 [-36]
64	-23.0 [-37]
66	-25.5 [-41]
68	-24.9 [-40]
70	-24.9 [-40]
72	-24.9 [-40]
74	-26.1 [-42]
76	-26.7 [-43]
78	-27.3 [-44]
80	-28.6 [-46]
82	-28.0 [-45]
84	-28.6 [-46]
86	-28.0 [-45]
88	-28.0 [-45]
90	-28.0 [-45]
92	-28.0 [-45]
94	-28.0 [-45]
96	-28.0 [-45]
98	-28.6 [-46]

Time (msec)	Delta-V, Lateral (MPH [km/h])
100	-28.6 [-46]
102	-28.6 [-46]
104	-28.6 [-46]
106	-28.6 [-46]
108	-29.2 [-47]
110	-28.6 [-46]
112	-28.6 [-46]
114	-28.6 [-46]
116	-28.6 [-46]
118	-28.0 [-45]
120	-28.0 [-45]
122	-28.0 [-45]
124	-28.0 [-45]
126	-28.0 [-45]
128	-28.0 [-45]
130	-28.0 [-45]
132	-28.0 [-45]
134	-27.3 [-44]
136	-27.3 [-44]
138	-27.3 [-44]
140	-27.3 [-44]
142	-26.7 [-43]
144	-26.7 [-43]
146	-26.1 [-42]
148	-26.1 [-42]
150	0.0 [0]
152	0.0 [0]
154	0.0 [0]
156	0.0 [0]
158	0.0 [0]
160	0.0 [0]
162	0.0 [0]
164	0.0 [0]
166	0.0 [0]
168	0.0 [0]
170	0.0 [0]
172	0.0 [0]
174	0.0 [0]
176	0.0 [0]
178	0.0 [0]
180	0.0 [0]
182	0.0 [0]
184	0.0 [0]
186	0.0 [0]
188	0.0 [0]
190	0.0 [0]
192	0.0 [0]
194	0.0 [0]
196	0.0 [0]
198	0.0 [0]

Time (msec)	Delta-V, Lateral (MPH [km/h])
200	0.0 [0]
202	0.0 [0]
204	0.0 [0]
206	0.0 [0]
208	0.0 [0]
210	0.0 [0]
212	0.0 [0]
214	0.0 [0]
216	0.0 [0]
218	0.0 [0]
220	0.0 [0]
222	0.0 [0]
224	0.0 [0]
226	0.0 [0]
228	0.0 [0]
230	0.0 [0]
232	0.0 [0]
234	0.0 [0]
236	0.0 [0]
238	0.0 [0]
240	0.0 [0]
242	0.0 [0]
244	0.0 [0]
246	0.0 [0]
248	0.0 [0]
250	0.0 [0]
252	0.0 [0]
254	0.0 [0]
256	0.0 [0]
258	0.0 [0]
260	0.0 [0]
262	0.0 [0]
264	0.0 [0]
266	0.0 [0]
268	0.0 [0]
270	0.0 [0]
272	0.0 [0]
274	0.0 [0]
276	0.0 [0]
278	0.0 [0]
280	0.0 [0]
282	0.0 [0]
284	0.0 [0]
286	0.0 [0]
288	0.0 [0]
290	0.0 [0]
292	0.0 [0]
294	0.0 [0]
296	0.0 [0]
298	0.0 [0]
300	0.0 [0]

Angular Rate Data (Most Recent Event)

Time (msec)	Angular Rate (deg/sec)
-2500	-2.00
-2480	-4.00
-2460	-2.00
-2440	-2.00
-2420	-4.00
-2400	0.00
-2380	0.00
-2360	2.00
-2340	2.00
-2320	2.00
-2300	2.00
-2280	2.00
-2260	6.00
-2240	6.00
-2220	6.00
-2200	2.00
-2180	2.00
-2160	0.00
-2140	-2.00
-2120	-2.00
-2100	-4.00
-2080	-6.00
-2060	-6.00
-2040	-8.00
-2020	-6.00
-2000	-6.00
-1980	-6.00
-1960	-4.00
-1940	-2.00
-1920	0.00
-1900	0.00
-1880	0.00
-1860	2.00
-1840	0.00
-1820	0.00
-1800	0.00
-1780	0.00
-1760	0.00
-1740	0.00
-1720	0.00
-1700	0.00
-1680	0.00
-1660	0.00
-1640	0.00
-1620	4.00
-1600	4.00
-1580	4.00
-1560	2.00
-1540	2.00
-1520	2.00

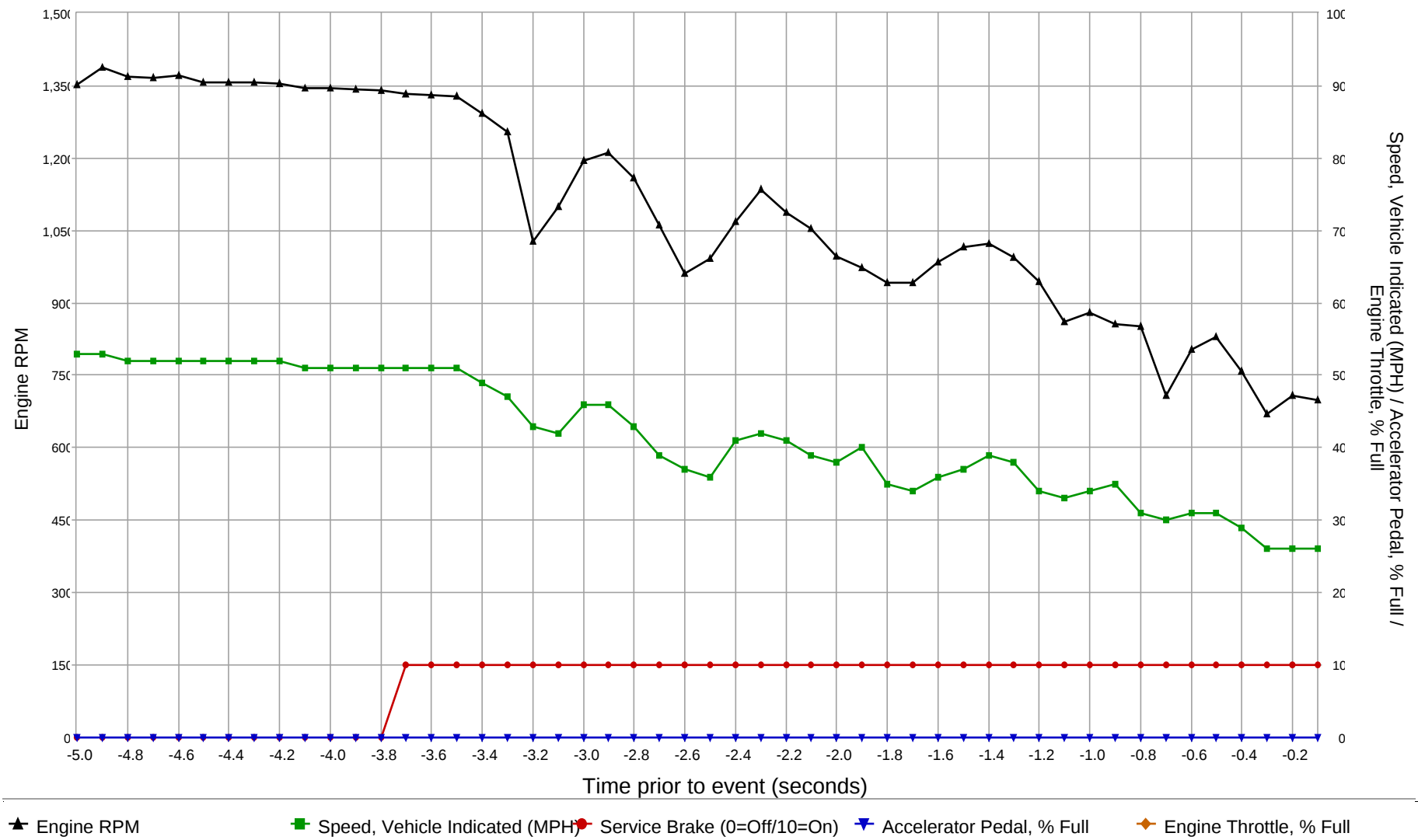
Time (msec)	Angular Rate (deg/sec)
-1500	2.00
-1480	2.00
-1460	0.00
-1440	0.00
-1420	2.00
-1400	4.00
-1380	4.00
-1360	2.00
-1340	0.00
-1320	4.00
-1300	6.00
-1280	6.00
-1260	6.00
-1240	6.00
-1220	8.00
-1200	8.00
-1180	10.00
-1160	10.00
-1140	8.00
-1120	8.00
-1100	6.00
-1080	6.00
-1060	2.00
-1040	2.00
-1020	2.00
-1000	0.00
-980	0.00
-960	0.00
-940	0.00
-920	0.00
-900	-2.00
-880	-2.00
-860	-2.00
-840	0.00
-820	0.00
-800	0.00
-780	0.00
-760	0.00
-740	-2.00
-720	-4.00
-700	-2.00
-680	-4.00
-660	-4.00
-640	-4.00
-620	-6.00
-600	-6.00
-580	-6.00
-560	-6.00
-540	-4.00
-520	-4.00

Time (msec)	Angular Rate (deg/sec)
-500	-4.00
-480	-4.00
-460	-4.00
-440	-4.00
-420	-2.00
-400	-4.00
-380	-6.00
-360	-6.00
-340	-6.00
-320	-6.00
-300	-2.00
-280	0.00
-260	0.00
-240	0.00
-220	-2.00
-200	-2.00
-180	-2.00
-160	-2.00
-140	-4.00
-120	-4.00
-100	-4.00
-80	-6.00
-60	-4.00
-40	-6.00
-20	-4.00
0	-2.00
20	0.00
40	0.00
60	0.00
80	0.00
100	0.00
120	0.00
140	0.00
160	0.00
180	0.00
200	0.00
220	0.00
240	0.00
260	0.00
280	0.00
300	0.00
320	0.00
340	0.00
360	0.00
380	0.00
400	0.00
420	0.00
440	0.00
460	0.00
480	0.00

Angular Rate Data (Most Recent Event)

Time (msec)	Angular Rate (deg/sec)	Time (msec)	Angular Rate (deg/sec)
500	0.00	1500	0.00
520	0.00	1520	0.00
540	0.00	1540	0.00
560	0.00	1560	0.00
580	0.00	1580	0.00
600	0.00	1600	0.00
620	0.00	1620	0.00
640	0.00	1640	0.00
660	0.00	1660	0.00
680	0.00	1680	0.00
700	0.00	1700	0.00
720	0.00	1720	0.00
740	0.00	1740	0.00
760	0.00	1760	0.00
780	0.00	1780	0.00
800	0.00	1800	0.00
820	0.00	1820	0.00
840	0.00	1840	0.00
860	0.00	1860	0.00
880	0.00	1880	0.00
900	0.00	1900	0.00
920	0.00	1920	0.00
940	0.00	1940	0.00
960	0.00	1960	0.00
980	0.00	1980	0.00
1000	0.00	2000	0.00
1020	0.00	2020	0.00
1040	0.00	2040	0.00
1060	0.00	2060	0.00
1080	0.00	2080	0.00
1100	0.00	2100	0.00
1120	0.00	2120	0.00
1140	0.00	2140	0.00
1160	0.00	2160	0.00
1180	0.00	2180	0.00
1200	0.00	2200	0.00
1220	0.00	2220	0.00
1240	0.00	2240	0.00
1260	0.00	2260	0.00
1280	0.00	2280	0.00
1300	0.00	2300	0.00
1320	0.00	2320	0.00
1340	0.00	2340	0.00
1360	0.00	2360	0.00
1380	0.00	2380	0.00
1400	0.00	2400	0.00
1420	0.00	2420	0.00
1440	0.00		
1460	0.00		
1480	0.00		

Pre-Crash Data (Most Recent Event)



SNA values will not be plotted on the graph

Pre-Crash Data (Most Recent Event - table 1 of 3)

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

Time Stamp (sec)	Pre-Crash Recorder Status	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % Full	Engine Throttle, % Full	Service Brake	Engine RPM	ABS Activity	Stability Control	Steering Input (deg)
-5.0	Complete	53 [85]	0	SNA	Off	1,351	No	Off	7
-4.9	Complete	53 [85]	0	SNA	Off	1,389	No	Off	7
-4.8	Complete	52 [84]	0	SNA	Off	1,368	No	Off	6
-4.7	Complete	52 [84]	0	SNA	Off	1,366	No	Off	3
-4.6	Complete	52 [84]	0	SNA	Off	1,372	No	Off	2
-4.5	Complete	52 [83]	0	SNA	Off	1,358	No	Off	0
-4.4	Complete	52 [83]	0	SNA	Off	1,356	No	Off	-2
-4.3	Complete	52 [83]	0	SNA	Off	1,357	No	Off	-4
-4.2	Complete	52 [83]	0	SNA	Off	1,354	No	Off	-4
-4.1	Complete	51 [83]	0	SNA	Off	1,346	No	Off	-4
-4.0	Complete	51 [83]	0	SNA	Off	1,344	No	Off	-4
-3.9	Complete	51 [82]	0	SNA	Off	1,342	No	Off	-2
-3.8	Complete	51 [82]	0	SNA	Off	1,340	No	Off	1
-3.7	Complete	51 [82]	0	SNA	On	1,334	No	Off	5
-3.6	Complete	51 [82]	0	SNA	On	1,331	No	Off	7
-3.5	Complete	51 [81]	0	SNA	On	1,328	No	Off	10
-3.4	Complete	49 [80]	0	SNA	On	1,292	No	Off	17
-3.3	Complete	47 [75]	0	SNA	On	1,255	No	Off	26
-3.2	Complete	43 [70]	0	SNA	On	1,027	Yes	Off	38
-3.1	Complete	42 [67]	0	SNA	On	1,099	Yes	Off	56
-3.0	Complete	46 [73]	0	SNA	On	1,194	Yes	Off	70
-2.9	Complete	46 [75]	0	SNA	On	1,211	Yes	Off	71
-2.8	Complete	43 [69]	0	SNA	On	1,160	Yes	Off	59
-2.7	Complete	39 [63]	0	SNA	On	1,061	Yes	Off	34
-2.6	Complete	37 [59]	0	SNA	On	961	Yes	Off	0
-2.5	Complete	36 [58]	0	SNA	On	991	Yes	Off	-27
-2.4	Complete	41 [65]	0	SNA	On	1,069	Yes	Off	-31
-2.3	Complete	42 [68]	0	SNA	On	1,136	Yes	Off	-32
-2.2	Complete	41 [67]	0	SNA	On	1,087	Yes	Off	-40
-2.1	Complete	39 [62]	0	SNA	On	1,054	Yes	Off	-38
-2.0	Complete	38 [62]	0	SNA	On	997	Yes	Off	-39
-1.9	Complete	40 [64]	0	SNA	On	973	Yes	Off	-44
-1.8	Complete	35 [57]	0	SNA	On	941	Yes	Off	-42
-1.7	Complete	34 [55]	0	SNA	On	942	Yes	Off	-28
-1.6	Complete	36 [57]	0	SNA	On	984	Yes	Off	-3
-1.5	Complete	37 [60]	0	SNA	On	1,017	Yes	Off	36
-1.4	Complete	39 [62]	0	SNA	On	1,024	Yes	Off	59
-1.3	Complete	38 [61]	0	SNA	On	994	Yes	Off	79
-1.2	Complete	34 [55]	0	SNA	On	945	Yes	Off	102
-1.1	Complete	33 [53]	0	SNA	On	860	Yes	Off	119
-1.0	Complete	34 [54]	0	SNA	On	880	Yes	Off	132
-0.9	Complete	35 [56]	0	SNA	On	857	Yes	Off	154
-0.8	Complete	31 [51]	0	SNA	On	852	Yes	Off	172
-0.7	Complete	30 [49]	0	SNA	On	708	Yes	Off	171
-0.6	Complete	31 [51]	0	SNA	On	804	Yes	Off	169
-0.5	Complete	31 [50]	0	SNA	On	830	Yes	Off	166
-0.4	Complete	29 [47]	0	SNA	On	758	Yes	Off	163
-0.3	Complete	26 [41]	0	SNA	On	671	Yes	Off	158
-0.2	Complete	26 [42]	0	SNA	On	709	Yes	Off	154
-0.1	Complete	26 [42]	0	SNA	On	699	Yes	Off	149

Pre-Crash Data (Most Recent Event - table 2 of 3)

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

Time Stamp (sec)	Raw Manifold Pressure (kPa)	PCM MIL	Yaw Rate (deg/sec)	Wheel Speed LF (RPM)	Wheel Speed RF (RPM)	Wheel Speed LR (RPM)	Wheel Speed RR (RPM)	ETC Lamp
-5.0	104.80	On	0	544	543	542	547	Off
-4.9	104.00	On	0	545	541	542	547	Off
-4.8	102.40	On	0	544	540	538	543	Off
-4.7	101.60	On	0	541	539	538	540	Off
-4.6	101.60	On	0	539	537	538	537	Off
-4.5	100.80	On	0	538	538	535	534	Off
-4.4	100.80	On	0	536	538	536	536	Off
-4.3	100.80	On	0	534	537	534	534	Off
-4.2	100.00	On	0	532	533	534	534	Off
-4.1	100.00	On	0	531	531	531	533	Off
-4.0	100.00	On	0	533	529	529	533	Off
-3.9	98.40	On	0	533	527	527	530	Off
-3.8	98.40	On	0	530	528	527	529	Off
-3.7	98.40	On	0	526	524	526	526	Off
-3.6	98.40	On	0	526	527	526	524	Off
-3.5	98.40	On	0	524	526	524	522	Off
-3.4	98.40	On	0	518	523	509	513	Off
-3.3	98.40	On	1	514	515	477	491	Off
-3.2	98.40	On	2	507	509	406	492	Off
-3.1	100.00	On	5	503	504	364	503	Off
-3.0	98.40	On	6	491	500	456	496	Off
-2.9	98.40	On	10	483	495	475	482	Off
-2.8	97.60	On	11	477	492	429	461	Off
-2.7	98.40	On	11	474	484	373	436	Off
-2.6	98.40	On	12	470	476	361	393	Off
-2.5	100.00	On	9	464	470	363	386	Off
-2.4	98.40	On	6	458	463	424	425	Off
-2.3	97.60	On	0	456	460	439	440	Off
-2.2	97.60	On	-4	459	452	432	427	Off
-2.1	97.60	On	-8	453	446	434	356	Off
-2.0	97.60	On	-9	448	443	403	386	Off
-1.9	97.60	On	-10	442	435	422	404	Off
-1.8	97.60	On	-11	440	427	351	388	Off
-1.7	98.40	On	-12	431	421	331	377	Off
-1.6	98.40	On	-11	425	420	424	322	Off
-1.5	97.60	On	-5	419	416	401	377	Off
-1.4	97.60	On	1	413	415	397	402	Off
-1.3	97.60	On	8	404	414	379	408	Off
-1.2	97.60	On	12	395	407	308	405	Off
-1.1	97.60	On	15	392	403	297	377	Off
-1.0	97.60	On	20	383	402	350	342	Off
-0.9	97.60	On	25	374	396	348	371	Off
-0.8	97.60	On	29	365	387	306	338	Off
-0.7	97.60	On	36	354	385	313	308	Off
-0.6	97.60	On	38	345	373	306	348	Off
-0.5	97.60	On	39	335	360	331	314	Off
-0.4	97.60	On	39	326	356	320	281	Off
-0.3	98.40	On	43	314	348	254	280	Off
-0.2	98.40	On	46	303	334	227	307	Off
-0.1	98.40	On	48	293	329	250	285	Off

Pre-Crash Data (Most Recent Event - table 3 of 3)

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

Time Stamp (sec)	ETC Flashing	Engine Torque Applied	PRNDL Status (if equip.)	Reverse Gear (Manual Only)	Cruise Control Engaged (if equip.)	Cruise Control Status (if equip.)
-5.0	No	No	SNA	No	Not Engaged	Off
-4.9	No	No	SNA	No	Not Engaged	Off
-4.8	No	No	SNA	No	Not Engaged	Off
-4.7	No	No	SNA	No	Not Engaged	Off
-4.6	No	No	SNA	No	Not Engaged	Off
-4.5	No	No	SNA	No	Not Engaged	Off
-4.4	No	No	SNA	No	Not Engaged	Off
-4.3	No	No	SNA	No	Not Engaged	Off
-4.2	No	No	SNA	No	Not Engaged	Off
-4.1	No	No	SNA	No	Not Engaged	Off
-4.0	No	No	SNA	No	Not Engaged	Off
-3.9	No	No	SNA	No	Not Engaged	Off
-3.8	No	No	SNA	No	Not Engaged	Off
-3.7	No	No	SNA	No	Not Engaged	Off
-3.6	No	No	SNA	No	Not Engaged	Off
-3.5	No	No	SNA	No	Not Engaged	Off
-3.4	No	No	SNA	No	Not Engaged	Off
-3.3	No	No	SNA	No	Not Engaged	Off
-3.2	No	No	SNA	No	Not Engaged	Off
-3.1	No	No	SNA	No	Not Engaged	Off
-3.0	No	No	SNA	No	Not Engaged	Off
-2.9	No	No	SNA	No	Not Engaged	Off
-2.8	No	No	SNA	No	Not Engaged	Off
-2.7	No	No	SNA	No	Not Engaged	Off
-2.6	No	No	SNA	No	Not Engaged	Off
-2.5	No	No	SNA	No	Not Engaged	Off
-2.4	No	No	SNA	No	Not Engaged	Off
-2.3	No	No	SNA	No	Not Engaged	Off
-2.2	No	No	SNA	No	Not Engaged	Off
-2.1	No	No	SNA	No	Not Engaged	Off
-2.0	No	No	SNA	No	Not Engaged	Off
-1.9	No	No	SNA	No	Not Engaged	Off
-1.8	No	No	SNA	No	Not Engaged	Off
-1.7	No	No	SNA	No	Not Engaged	Off
-1.6	No	No	SNA	No	Not Engaged	Off
-1.5	No	No	SNA	No	Not Engaged	Off
-1.4	No	No	SNA	No	Not Engaged	Off
-1.3	No	No	SNA	No	Not Engaged	Off
-1.2	No	No	SNA	No	Not Engaged	Off
-1.1	No	No	SNA	No	Not Engaged	Off
-1.0	No	No	SNA	No	Not Engaged	Off
-0.9	No	No	SNA	No	Not Engaged	Off
-0.8	No	No	SNA	No	Not Engaged	Off
-0.7	No	No	SNA	No	Not Engaged	Off
-0.6	No	No	SNA	No	Not Engaged	Off
-0.5	No	No	SNA	No	Not Engaged	Off
-0.4	No	No	SNA	No	Not Engaged	Off
-0.3	No	No	SNA	No	Not Engaged	Off
-0.2	No	No	SNA	No	Not Engaged	Off
-0.1	No	No	SNA	No	Not Engaged	Off

System Configuration at Event (1st Prior Event)

Configured for Driver Frontal Airbag	Yes
Configured for Passenger Airbag	Yes
Configured for Driver Retractor Pretensioner	Yes
Configured for Passenger Retractor Pretensioner	Yes
Configured for Left Side Curtain Airbag	Yes
Configured for Right Side Curtain Airbag	Yes
Configured for Front Left Seat Airbags	Yes
Configured for Front Right Seat Airbag	Yes
Configured for Safety Belt Status, Driver	Yes
Configured for Safety Belt Status, Outboard Front Passenger	No
Configured for Seat Track Position Switch, Foremost, Status, Driver	No
Configured for Seat Track Position Switch, Foremost, Status, Outboard Front Passenger	No
Configured for Rollover Sensing	Yes

System Status at Event (1st Prior Event)

Event Number	1
Multi-Event, Number of Events (1,2)	1
Total number of events	2
Time from Event 1 to 2 (Time since last event)(sec)	>5
Complete File Recorded (Yes, No)	Yes
Maximum Delta-V Longitudinal (MPH [km/h])	-4.3 [-7]
Time, Maximum Delta-V, Longitudinal (msec)	100
Maximum Delta-V Lateral (MPH [km/h])	-1.2 [-2]
Time, Maximum Delta-V, Lateral (msec)	64
Ignition Cycle, Crash	12268
Safety Belt Status, Driver	Buckled
Airbag Warning Lamp, On/Off	Off
Operation System Time (sec)	20297103
Airbag Warning Lamp On Time Before Event (min)	0
Supply Voltage at Event, ACM (V)	12.2
Operation via Energy Reserve	No
VIN at Event (last 8 digits)	EG*****
Odometer at Event (km [miles])	243344 [151207.2]

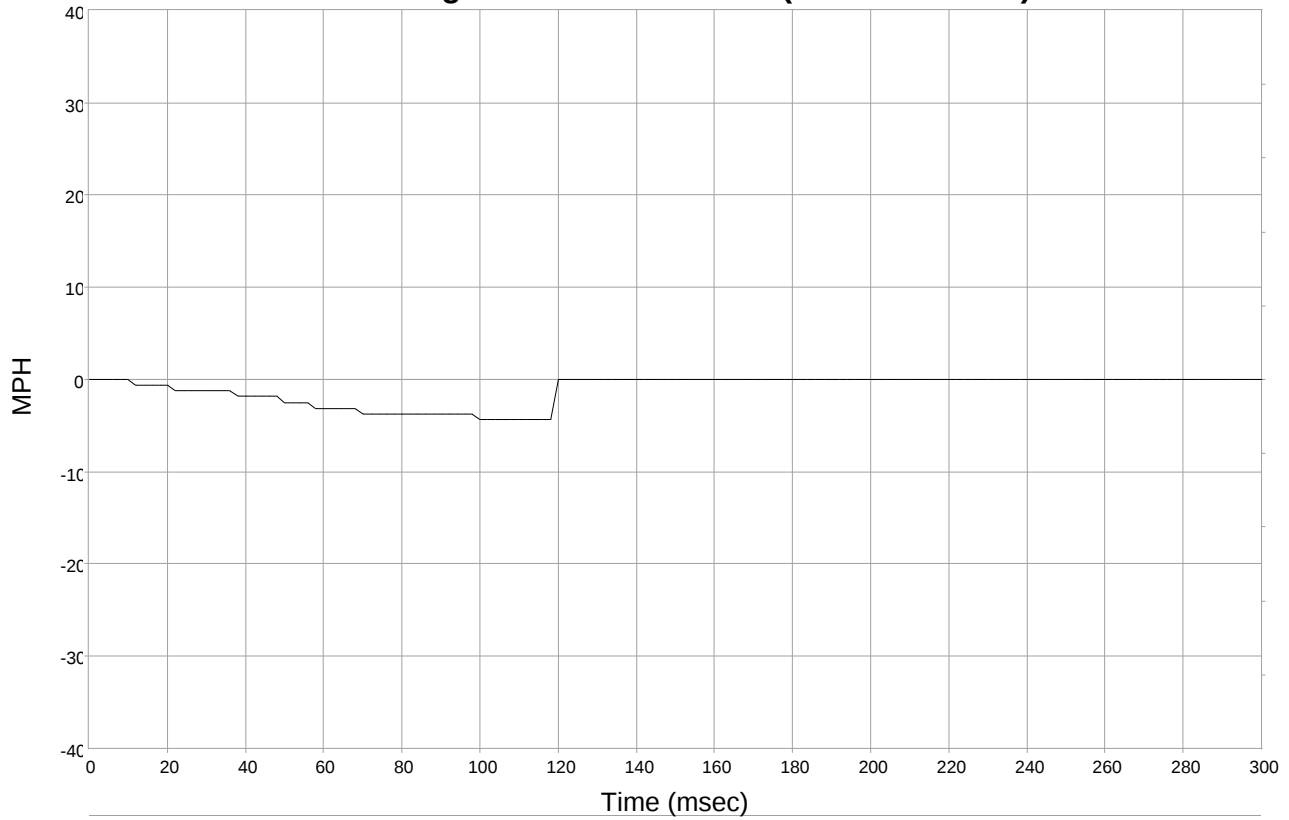
Deployment Command Data (1st Prior Event)

Driver Frontal Airbag Commanded	No
Driver Front Airbag, Time to 1st stage (msec)	0
Driver Front Airbag, Time to 2nd Stage from T0 (msec)	0
Passenger Frontal Airbag Commanded	No
Passenger Front Airbag, Time to 1st stage (msec)	0
Passenger Front Airbag, Time to 2nd Stage from T0 (msec)	0
Commanded Driver Retractor Pretensioner Deployment	No
Commanded Passenger Retractor Pretensioner Deployment	No
Commanded Left Side Curtain Airbag Deployment	No
Commanded Left Seat Airbag Deployment	No
Commanded Right Side Curtain Airbag Deployment	No
Commanded Front Right Side Seat Airbag Deployment	No

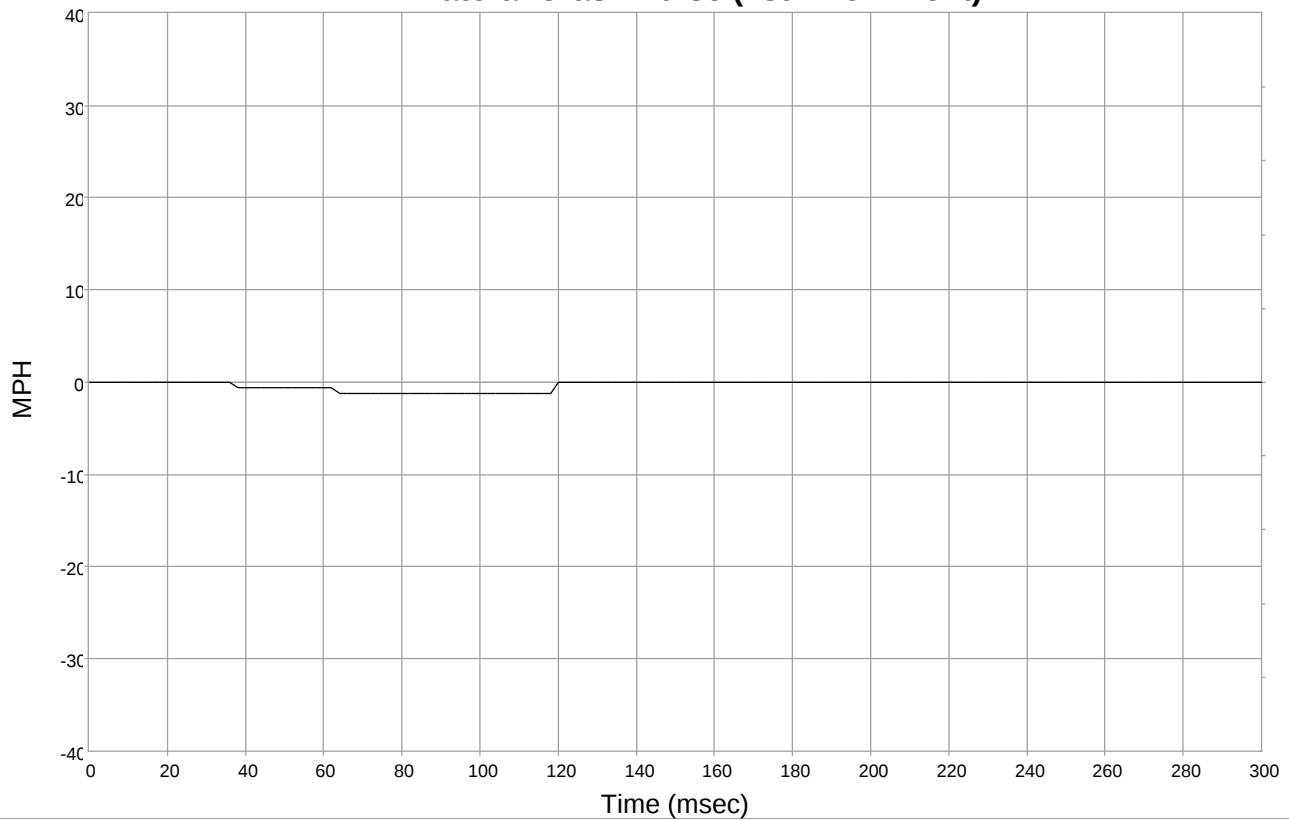
DTCs Present at Start of Event (1st Prior Event)

DTC Number	
B0020-13	Stored

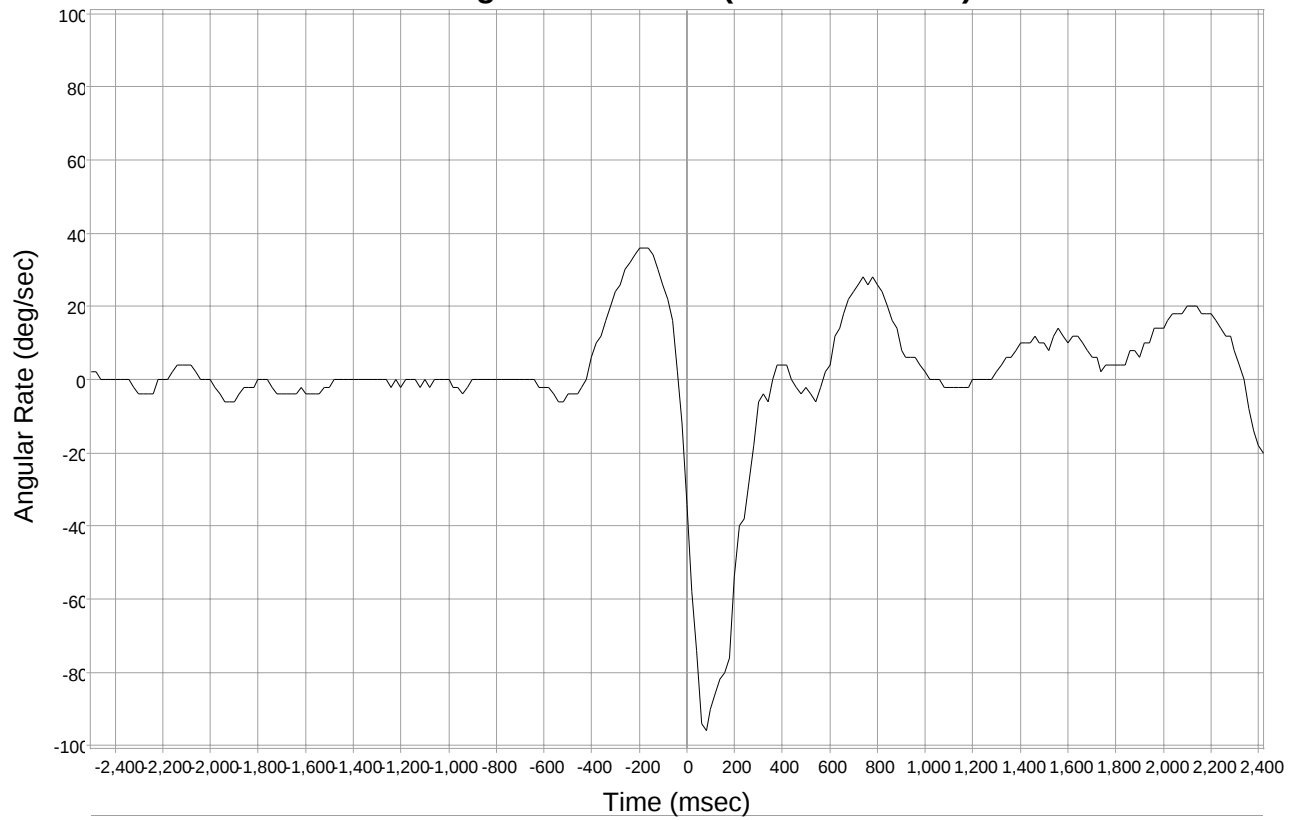
Longitudinal Crash Pulse (1st Prior Event)



Lateral Crash Pulse (1st Prior Event)



Angular Rate Data (1st Prior Event)



Longitudinal Crash Pulse (1st Prior Event)

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
2	0.0 [0]
4	0.0 [0]
6	0.0 [0]
8	0.0 [0]
10	0.0 [0]
12	-0.6 [-1]
14	-0.6 [-1]
16	-0.6 [-1]
18	-0.6 [-1]
20	-0.6 [-1]
22	-1.2 [-2]
24	-1.2 [-2]
26	-1.2 [-2]
28	-1.2 [-2]
30	-1.2 [-2]
32	-1.2 [-2]
34	-1.2 [-2]
36	-1.2 [-2]
38	-1.9 [-3]
40	-1.9 [-3]
42	-1.9 [-3]
44	-1.9 [-3]
46	-1.9 [-3]
48	-1.9 [-3]
50	-2.5 [-4]
52	-2.5 [-4]
54	-2.5 [-4]
56	-2.5 [-4]
58	-3.1 [-5]
60	-3.1 [-5]
62	-3.1 [-5]
64	-3.1 [-5]
66	-3.1 [-5]
68	-3.1 [-5]
70	-3.7 [-6]
72	-3.7 [-6]
74	-3.7 [-6]
76	-3.7 [-6]
78	-3.7 [-6]
80	-3.7 [-6]
82	-3.7 [-6]
84	-3.7 [-6]
86	-3.7 [-6]
88	-3.7 [-6]
90	-3.7 [-6]
92	-3.7 [-6]
94	-3.7 [-6]
96	-3.7 [-6]
98	-3.7 [-6]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
100	-4.3 [-7]
102	-4.3 [-7]
104	-4.3 [-7]
106	-4.3 [-7]
108	-4.3 [-7]
110	-4.3 [-7]
112	-4.3 [-7]
114	-4.3 [-7]
116	-4.3 [-7]
118	-4.3 [-7]
120	0.0 [0]
122	0.0 [0]
124	0.0 [0]
126	0.0 [0]
128	0.0 [0]
130	0.0 [0]
132	0.0 [0]
134	0.0 [0]
136	0.0 [0]
138	0.0 [0]
140	0.0 [0]
142	0.0 [0]
144	0.0 [0]
146	0.0 [0]
148	0.0 [0]
150	0.0 [0]
152	0.0 [0]
154	0.0 [0]
156	0.0 [0]
158	0.0 [0]
160	0.0 [0]
162	0.0 [0]
164	0.0 [0]
166	0.0 [0]
168	0.0 [0]
170	0.0 [0]
172	0.0 [0]
174	0.0 [0]
176	0.0 [0]
178	0.0 [0]
180	0.0 [0]
182	0.0 [0]
184	0.0 [0]
186	0.0 [0]
188	0.0 [0]
190	0.0 [0]
192	0.0 [0]
194	0.0 [0]
196	0.0 [0]
198	0.0 [0]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
200	0.0 [0]
202	0.0 [0]
204	0.0 [0]
206	0.0 [0]
208	0.0 [0]
210	0.0 [0]
212	0.0 [0]
214	0.0 [0]
216	0.0 [0]
218	0.0 [0]
220	0.0 [0]
222	0.0 [0]
224	0.0 [0]
226	0.0 [0]
228	0.0 [0]
230	0.0 [0]
232	0.0 [0]
234	0.0 [0]
236	0.0 [0]
238	0.0 [0]
240	0.0 [0]
242	0.0 [0]
244	0.0 [0]
246	0.0 [0]
248	0.0 [0]
250	0.0 [0]
252	0.0 [0]
254	0.0 [0]
256	0.0 [0]
258	0.0 [0]
260	0.0 [0]
262	0.0 [0]
264	0.0 [0]
266	0.0 [0]
268	0.0 [0]
270	0.0 [0]
272	0.0 [0]
274	0.0 [0]
276	0.0 [0]
278	0.0 [0]
280	0.0 [0]
282	0.0 [0]
284	0.0 [0]
286	0.0 [0]
288	0.0 [0]
290	0.0 [0]
292	0.0 [0]
294	0.0 [0]
296	0.0 [0]
298	0.0 [0]
300	0.0 [0]

Lateral Crash Pulse (1st Prior Event)

Time (msec)	Delta-V, Lateral (MPH [km/h])
0	0.0 [0]
2	0.0 [0]
4	0.0 [0]
6	0.0 [0]
8	0.0 [0]
10	0.0 [0]
12	0.0 [0]
14	0.0 [0]
16	0.0 [0]
18	0.0 [0]
20	0.0 [0]
22	0.0 [0]
24	0.0 [0]
26	0.0 [0]
28	0.0 [0]
30	0.0 [0]
32	0.0 [0]
34	0.0 [0]
36	0.0 [0]
38	-0.6 [-1]
40	-0.6 [-1]
42	-0.6 [-1]
44	-0.6 [-1]
46	-0.6 [-1]
48	-0.6 [-1]
50	-0.6 [-1]
52	-0.6 [-1]
54	-0.6 [-1]
56	-0.6 [-1]
58	-0.6 [-1]
60	-0.6 [-1]
62	-0.6 [-1]
64	-1.2 [-2]
66	-1.2 [-2]
68	-1.2 [-2]
70	-1.2 [-2]
72	-1.2 [-2]
74	-1.2 [-2]
76	-1.2 [-2]
78	-1.2 [-2]
80	-1.2 [-2]
82	-1.2 [-2]
84	-1.2 [-2]
86	-1.2 [-2]
88	-1.2 [-2]
90	-1.2 [-2]
92	-1.2 [-2]
94	-1.2 [-2]
96	-1.2 [-2]
98	-1.2 [-2]

Time (msec)	Delta-V, Lateral (MPH [km/h])
100	-1.2 [-2]
102	-1.2 [-2]
104	-1.2 [-2]
106	-1.2 [-2]
108	-1.2 [-2]
110	-1.2 [-2]
112	-1.2 [-2]
114	-1.2 [-2]
116	-1.2 [-2]
118	-1.2 [-2]
120	0.0 [0]
122	0.0 [0]
124	0.0 [0]
126	0.0 [0]
128	0.0 [0]
130	0.0 [0]
132	0.0 [0]
134	0.0 [0]
136	0.0 [0]
138	0.0 [0]
140	0.0 [0]
142	0.0 [0]
144	0.0 [0]
146	0.0 [0]
148	0.0 [0]
150	0.0 [0]
152	0.0 [0]
154	0.0 [0]
156	0.0 [0]
158	0.0 [0]
160	0.0 [0]
162	0.0 [0]
164	0.0 [0]
166	0.0 [0]
168	0.0 [0]
170	0.0 [0]
172	0.0 [0]
174	0.0 [0]
176	0.0 [0]
178	0.0 [0]
180	0.0 [0]
182	0.0 [0]
184	0.0 [0]
186	0.0 [0]
188	0.0 [0]
190	0.0 [0]
192	0.0 [0]
194	0.0 [0]
196	0.0 [0]
198	0.0 [0]

Time (msec)	Delta-V, Lateral (MPH [km/h])
200	0.0 [0]
202	0.0 [0]
204	0.0 [0]
206	0.0 [0]
208	0.0 [0]
210	0.0 [0]
212	0.0 [0]
214	0.0 [0]
216	0.0 [0]
218	0.0 [0]
220	0.0 [0]
222	0.0 [0]
224	0.0 [0]
226	0.0 [0]
228	0.0 [0]
230	0.0 [0]
232	0.0 [0]
234	0.0 [0]
236	0.0 [0]
238	0.0 [0]
240	0.0 [0]
242	0.0 [0]
244	0.0 [0]
246	0.0 [0]
248	0.0 [0]
250	0.0 [0]
252	0.0 [0]
254	0.0 [0]
256	0.0 [0]
258	0.0 [0]
260	0.0 [0]
262	0.0 [0]
264	0.0 [0]
266	0.0 [0]
268	0.0 [0]
270	0.0 [0]
272	0.0 [0]
274	0.0 [0]
276	0.0 [0]
278	0.0 [0]
280	0.0 [0]
282	0.0 [0]
284	0.0 [0]
286	0.0 [0]
288	0.0 [0]
290	0.0 [0]
292	0.0 [0]
294	0.0 [0]
296	0.0 [0]
298	0.0 [0]
300	0.0 [0]

Angular Rate Data (1st Prior Event)

Time (msec)	Angular Rate (deg/sec)
-2500	2.00
-2480	2.00
-2460	0.00
-2440	0.00
-2420	0.00
-2400	0.00
-2380	0.00
-2360	0.00
-2340	0.00
-2320	-2.00
-2300	-4.00
-2280	-4.00
-2260	-4.00
-2240	-4.00
-2220	0.00
-2200	0.00
-2180	0.00
-2160	2.00
-2140	4.00
-2120	4.00
-2100	4.00
-2080	4.00
-2060	2.00
-2040	0.00
-2020	0.00
-2000	0.00
-1980	-2.00
-1960	-4.00
-1940	-6.00
-1920	-6.00
-1900	-6.00
-1880	-4.00
-1860	-2.00
-1840	-2.00
-1820	-2.00
-1800	0.00
-1780	0.00
-1760	0.00
-1740	-2.00
-1720	-4.00
-1700	-4.00
-1680	-4.00
-1660	-4.00
-1640	-4.00
-1620	-2.00
-1600	-4.00
-1580	-4.00
-1560	-4.00
-1540	-4.00
-1520	-2.00

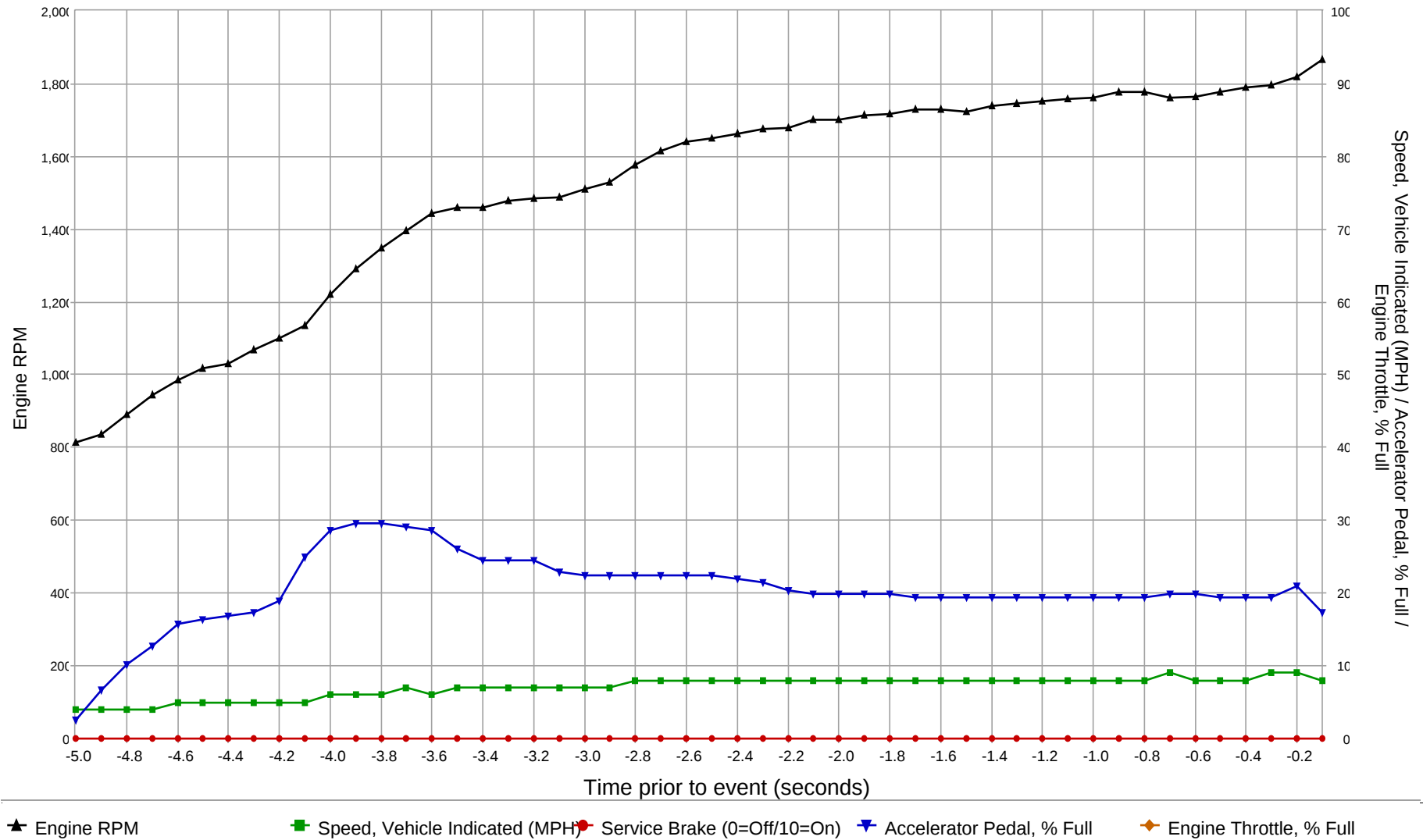
Time (msec)	Angular Rate (deg/sec)
-1500	-2.00
-1480	0.00
-1460	0.00
-1440	0.00
-1420	0.00
-1400	0.00
-1380	0.00
-1360	0.00
-1340	0.00
-1320	0.00
-1300	0.00
-1280	0.00
-1260	0.00
-1240	-2.00
-1220	0.00
-1200	-2.00
-1180	0.00
-1160	0.00
-1140	0.00
-1120	-2.00
-1100	0.00
-1080	-2.00
-1060	0.00
-1040	0.00
-1020	0.00
-1000	0.00
-980	-2.00
-960	-2.00
-940	-4.00
-920	-2.00
-900	0.00
-880	0.00
-860	0.00
-840	0.00
-820	0.00
-800	0.00
-780	0.00
-760	0.00
-740	0.00
-720	0.00
-700	0.00
-680	0.00
-660	0.00
-640	0.00
-620	-2.00
-600	-2.00
-580	-2.00
-560	-4.00
-540	-6.00
-520	-6.00

Time (msec)	Angular Rate (deg/sec)
-500	-4.00
-480	-4.00
-460	-4.00
-440	-2.00
-420	0.00
-400	6.00
-380	10.00
-360	12.00
-340	16.00
-320	20.00
-300	24.00
-280	26.00
-260	30.00
-240	32.00
-220	34.00
-200	36.00
-180	36.00
-160	36.00
-140	34.00
-120	30.00
-100	26.00
-80	22.00
-60	16.00
-40	2.00
-20	-12.00
0	-34.00
20	-58.00
40	-74.00
60	-94.00
80	-96.00
100	-90.00
120	-86.00
140	-82.00
160	-80.00
180	-76.00
200	-54.00
220	-40.00
240	-38.00
260	-28.00
280	-18.00
300	-6.00
320	-4.00
340	-6.00
360	0.00
380	4.00
400	4.00
420	4.00
440	0.00
460	-2.00
480	-4.00

Angular Rate Data (1st Prior Event)

Time (msec)	Angular Rate (deg/sec)	Time (msec)	Angular Rate (deg/sec)
500	-2.00	1500	10.00
520	-4.00	1520	8.00
540	-6.00	1540	12.00
560	-2.00	1560	14.00
580	2.00	1580	12.00
600	4.00	1600	10.00
620	12.00	1620	12.00
640	14.00	1640	12.00
660	18.00	1660	10.00
680	22.00	1680	8.00
700	24.00	1700	6.00
720	26.00	1720	6.00
740	28.00	1740	2.00
760	26.00	1760	4.00
780	28.00	1780	4.00
800	26.00	1800	4.00
820	24.00	1820	4.00
840	20.00	1840	4.00
860	16.00	1860	8.00
880	14.00	1880	8.00
900	8.00	1900	6.00
920	6.00	1920	10.00
940	6.00	1940	10.00
960	6.00	1960	14.00
980	4.00	1980	14.00
1000	2.00	2000	14.00
1020	0.00	2020	16.00
1040	0.00	2040	18.00
1060	0.00	2060	18.00
1080	-2.00	2080	18.00
1100	-2.00	2100	20.00
1120	-2.00	2120	20.00
1140	-2.00	2140	20.00
1160	-2.00	2160	18.00
1180	-2.00	2180	18.00
1200	0.00	2200	18.00
1220	0.00	2220	16.00
1240	0.00	2240	14.00
1260	0.00	2260	12.00
1280	0.00	2280	12.00
1300	2.00	2300	8.00
1320	4.00	2320	4.00
1340	6.00	2340	0.00
1360	6.00	2360	-8.00
1380	8.00	2380	-14.00
1400	10.00	2400	-18.00
1420	10.00	2420	-20.00
1440	10.00		
1460	12.00		
1480	10.00		

Pre-Crash Data (1st Prior Event)



SNA values will not be plotted on the graph

Pre-Crash Data (1st Prior Event - table 1 of 3)

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

Time Stamp (sec)	Pre-Crash Recorder Status	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % Full	Engine Throttle, % Full	Service Brake	Engine RPM	ABS Activity	Stability Control	Steering Input (deg)
-5.0	Complete	4 [6]	3	SNA	Off	814	No	On	492
-4.9	Complete	4 [6]	7	SNA	Off	836	No	On	489
-4.8	Complete	4 [7]	10	SNA	Off	889	No	On	484
-4.7	Complete	4 [7]	13	SNA	Off	944	No	On	479
-4.6	Complete	5 [7]	16	SNA	Off	986	No	On	470
-4.5	Complete	5 [8]	16	SNA	Off	1,016	No	On	453
-4.4	Complete	5 [9]	17	SNA	Off	1,031	No	On	442
-4.3	Complete	5 [8]	17	SNA	Off	1,069	No	On	428
-4.2	Complete	5 [9]	19	SNA	Off	1,100	No	On	419
-4.1	Complete	5 [8]	25	SNA	Off	1,136	No	On	412
-4.0	Complete	6 [9]	29	SNA	Off	1,220	No	On	399
-3.9	Complete	6 [10]	30	SNA	Off	1,291	No	On	376
-3.8	Complete	6 [10]	30	SNA	Off	1,348	No	On	362
-3.7	Complete	7 [12]	29	SNA	Off	1,395	No	On	345
-3.6	Complete	6 [10]	29	SNA	Off	1,443	No	On	321
-3.5	Complete	7 [11]	26	SNA	Off	1,461	No	On	307
-3.4	Complete	7 [12]	24	SNA	Off	1,459	No	On	303
-3.3	Complete	7 [11]	24	SNA	Off	1,477	No	On	287
-3.2	Complete	7 [11]	24	SNA	Off	1,485	No	On	272
-3.1	Complete	7 [12]	23	SNA	Off	1,487	No	On	258
-3.0	Complete	7 [12]	22	SNA	Off	1,509	No	On	236
-2.9	Complete	7 [12]	22	SNA	Off	1,529	No	On	216
-2.8	Complete	8 [13]	22	SNA	Off	1,576	No	On	198
-2.7	Complete	8 [12]	22	SNA	Off	1,616	No	On	181
-2.6	Complete	8 [13]	22	SNA	Off	1,642	No	On	165
-2.5	Complete	8 [13]	22	SNA	Off	1,649	No	On	158
-2.4	Complete	8 [13]	22	SNA	Off	1,662	No	On	157
-2.3	Complete	8 [13]	21	SNA	Off	1,676	No	On	157
-2.2	Complete	8 [13]	20	SNA	Off	1,678	No	On	156
-2.1	Complete	8 [13]	20	SNA	Off	1,700	No	On	156
-2.0	Complete	8 [13]	20	SNA	Off	1,700	No	On	156
-1.9	Complete	8 [13]	20	SNA	Off	1,715	No	On	155
-1.8	Complete	8 [13]	20	SNA	Off	1,718	No	On	154
-1.7	Complete	8 [13]	19	SNA	Off	1,729	No	On	155
-1.6	Complete	8 [13]	19	SNA	Off	1,729	No	On	158
-1.5	Complete	8 [13]	19	SNA	Off	1,723	No	On	161
-1.4	Complete	8 [13]	19	SNA	Off	1,738	No	On	169
-1.3	Complete	8 [13]	19	SNA	Off	1,745	No	On	183
-1.2	Complete	8 [14]	19	SNA	Off	1,753	No	On	198
-1.1	Complete	8 [13]	19	SNA	Off	1,758	No	On	212
-1.0	Complete	8 [14]	19	SNA	Off	1,760	No	On	227
-0.9	Complete	8 [13]	19	SNA	Off	1,778	No	On	241
-0.8	Complete	8 [13]	19	SNA	Off	1,778	No	On	249
-0.7	Complete	9 [14]	20	SNA	Off	1,762	No	On	253
-0.6	Complete	8 [14]	20	SNA	Off	1,764	No	On	259
-0.5	Complete	8 [14]	19	SNA	Off	1,777	No	On	261
-0.4	Complete	8 [14]	19	SNA	Off	1,789	No	On	261
-0.3	Complete	9 [14]	19	SNA	Off	1,797	No	On	265
-0.2	Complete	9 [14]	21	SNA	Off	1,818	No	On	268
-0.1	Complete	8 [13]	17	SNA	Off	1,865	No	On	266

Pre-Crash Data (1st Prior Event - table 2 of 3)

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

Time Stamp (sec)	Raw Manifold Pressure (kPa)	PCM MIL	Yaw Rate (deg/sec)	Wheel Speed LF (RPM)	Wheel Speed RF (RPM)	Wheel Speed LR (RPM)	Wheel Speed RR (RPM)	ETC Lamp
-5.0	100.00	On	15	44	52	36	46	Off
-4.9	100.00	On	16	43	53	35	47	Off
-4.8	100.00	On	16	43	53	37	48	Off
-4.7	100.00	On	15	44	54	39	49	Off
-4.6	100.00	On	15	45	55	45	52	Off
-4.5	100.00	On	16	44	56	47	53	Off
-4.4	100.00	On	16	46	59	59	51	Off
-4.3	100.00	On	16	48	59	46	56	Off
-4.2	100.00	On	16	50	60	55	55	Off
-4.1	100.00	On	16	51	62	50	58	Off
-4.0	100.00	On	16	53	63	58	60	Off
-3.9	100.00	On	16	54	64	67	62	Off
-3.8	100.00	On	14	55	65	64	64	Off
-3.7	100.00	On	15	58	69	89	62	Off
-3.6	100.00	On	16	58	69	61	70	Off
-3.5	100.00	On	16	62	71	64	73	Off
-3.4	100.80	On	14	63	73	75	73	Off
-3.3	100.80	On	14	65	75	67	73	Off
-3.2	101.60	On	13	68	76	68	75	Off
-3.1	101.60	On	13	68	78	72	75	Off
-3.0	101.60	On	14	71	79	72	79	Off
-2.9	101.60	On	13	71	82	72	79	Off
-2.8	102.40	On	12	71	81	86	79	Off
-2.7	102.40	On	10	72	80	76	80	Off
-2.6	102.40	On	9	74	81	79	83	Off
-2.5	102.40	On	9	75	83	81	83	Off
-2.4	104.00	On	8	78	85	81	84	Off
-2.3	104.00	On	8	78	83	82	83	Off
-2.2	104.00	On	8	78	85	83	85	Off
-2.1	104.80	On	8	82	87	81	83	Off
-2.0	104.80	On	9	79	83	84	86	Off
-1.9	104.80	On	8	78	87	81	87	Off
-1.8	104.80	On	8	81	89	81	87	Off
-1.7	104.80	On	8	81	85	81	88	Off
-1.6	105.60	On	9	79	86	84	86	Off
-1.5	105.60	On	10	81	91	81	90	Off
-1.4	105.60	On	10	82	90	80	89	Off
-1.3	105.60	On	9	83	88	86	86	Off
-1.2	105.60	On	9	81	87	81	90	Off
-1.1	105.60	On	11	81	94	84	88	Off
-1.0	105.60	On	13	82	89	87	87	Off
-0.9	105.60	On	13	81	92	82	87	Off
-0.8	105.60	On	14	79	92	78	92	Off
-0.7	105.60	On	14	84	93	85	92	Off
-0.6	105.60	On	15	83	95	82	92	Off
-0.5	105.60	On	14	85	94	81	94	Off
-0.4	106.40	On	16	86	94	82	93	Off
-0.3	105.60	On	14	87	97	85	94	Off
-0.2	106.40	On	12	86	99	90	91	Off
-0.1	105.60	On	10	83	94	86	90	Off

Pre-Crash Data (1st Prior Event - table 3 of 3)

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

Time Stamp (sec)	ETC Flashing	Engine Torque Applied	PRNDL Status (if equip.)	Reverse Gear (Manual Only)	Cruise Control Engaged (if equip.)	Cruise Control Status (if equip.)
-5.0	No	No	SNA	No	Not Engaged	Off
-4.9	No	No	SNA	No	Not Engaged	Off
-4.8	No	No	SNA	No	Not Engaged	Off
-4.7	No	No	SNA	No	Not Engaged	Off
-4.6	No	No	SNA	No	Not Engaged	Off
-4.5	No	No	SNA	No	Not Engaged	Off
-4.4	No	No	SNA	No	Not Engaged	Off
-4.3	No	No	SNA	No	Not Engaged	Off
-4.2	No	No	SNA	No	Not Engaged	Off
-4.1	No	No	SNA	No	Not Engaged	Off
-4.0	No	No	SNA	No	Not Engaged	Off
-3.9	No	No	SNA	No	Not Engaged	Off
-3.8	No	No	SNA	No	Not Engaged	Off
-3.7	No	No	SNA	No	Not Engaged	Off
-3.6	No	No	SNA	No	Not Engaged	Off
-3.5	No	No	SNA	No	Not Engaged	Off
-3.4	No	No	SNA	No	Not Engaged	Off
-3.3	No	No	SNA	No	Not Engaged	Off
-3.2	No	No	SNA	No	Not Engaged	Off
-3.1	No	No	SNA	No	Not Engaged	Off
-3.0	No	No	SNA	No	Not Engaged	Off
-2.9	No	No	SNA	No	Not Engaged	Off
-2.8	No	No	SNA	No	Not Engaged	Off
-2.7	No	No	SNA	No	Not Engaged	Off
-2.6	No	No	SNA	No	Not Engaged	Off
-2.5	No	No	SNA	No	Not Engaged	Off
-2.4	No	No	SNA	No	Not Engaged	Off
-2.3	No	No	SNA	No	Not Engaged	Off
-2.2	No	No	SNA	No	Not Engaged	Off
-2.1	No	No	SNA	No	Not Engaged	Off
-2.0	No	No	SNA	No	Not Engaged	Off
-1.9	No	No	SNA	No	Not Engaged	Off
-1.8	No	No	SNA	No	Not Engaged	Off
-1.7	No	No	SNA	No	Not Engaged	Off
-1.6	No	No	SNA	No	Not Engaged	Off
-1.5	No	No	SNA	No	Not Engaged	Off
-1.4	No	No	SNA	No	Not Engaged	Off
-1.3	No	No	SNA	No	Not Engaged	Off
-1.2	No	No	SNA	No	Not Engaged	Off
-1.1	No	No	SNA	No	Not Engaged	Off
-1.0	No	No	SNA	No	Not Engaged	Off
-0.9	No	No	SNA	No	Not Engaged	Off
-0.8	No	No	SNA	No	Not Engaged	Off
-0.7	No	No	SNA	No	Not Engaged	Off
-0.6	No	No	SNA	No	Not Engaged	Off
-0.5	No	No	SNA	No	Not Engaged	Off
-0.4	No	No	SNA	No	Not Engaged	Off
-0.3	No	No	SNA	No	Not Engaged	Off
-0.2	No	No	SNA	No	Not Engaged	Off
-0.1	No	No	SNA	No	Not Engaged	Off

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.

62 F1 00 00 42 01 03

62 F1 32 36 38 32 36 33 37 33 39 41 41

62 F1 50 0C 25 02

62 F1 51 0D 1C 00 0E 1A 00

62 02 20 07 00 00 00 00 00 00 FF FF FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F 30 30 30 30
30 30 30 30 30 30 30 30 30 30 30 30 7E 0F 00 00 00 00

62 F1 8C 54 35 32 4D 44 32 36 37 33 30 30 34 34 33

62 F1 54 00 03

62 F1 90 33 43 36 55 52 35 43 4C 33 45 47 2A 2A 2A 2A 2A 2A

62 02 B1 01 CC 02 02 63 FF 0F 0F 18 01 38 AC 53 00 00 00 B0 30 96 25 99 49 22 02 07 F8 01 F0
03 00 00 00 00 00 33 11 0F 00 00 00 00 33 83 08 00 00 80 0A 0A 0E 0E 10 0E 1A 00 8A 80 20 13
00
00
00 00 00 00 00 45 47 2A 2A 2A 2A 2A 2A FF FE FF FF FF 00 00 00 03 8E F5 00 00 00 00 00 00 00 00 00 00
00
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00
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00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 80 00 00 00 20 28 00 00 CB 45 D1 36 00 06 00 00 00
00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

62 02 B2 02 CC 01 02 63 FF 0F 0F 18 01 35 B5 8F 00 00 00 B0 2F EC 25 21 A4 22 02 07 F8 01 F0
03 00 00 00 00 00 33 11 0F 00 00 00 00 00 00 00 00 00 40 00 00 00 00 00 0E 1A 00 78 80 20 13
00
00
00 00 00 00 00 45 47 2A 2A 2A 2A 2A 2A FF FE FF FF FF 00 00 00 03 7A F4 00 00 00 00 00 00 00 00 00 00
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62 02 B3 FF
FF
FF
FF
FF FF FF FF FF FF 2A 2A 2A 2A 2A 2A FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF
FF
FF
FF
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FF FF

62 02 C1 02 7F 00 01 7F 00 00 00 00



3C6UR5CL3EG*****

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71 01 03 01 01 0C CC 00 03 E2 00 03 30 02 F6 03 28 03 3B 83 70 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 9E 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1E AE 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 5A 8E 84 00 00 00 00 00 00 11 F4 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 0D CC 00 04 00 00 03 23 03 19 03 39 03 3D 80 68 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 76 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1F 0C 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 61 71 84 00 00 00 00 00 00 11 2C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 0E CC 00 03 F9 00 02 F2 03 21 03 46 03 40 7E 08 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 47 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1E 25 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 64 65 84 00 00 00 00 00 00 12 58 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 0F CC 00 03 D8 00 02 83 03 4F 03 52 03 47 7B A8 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F FB 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1C B7 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 72 5F 84 00 00 00 00 00 00 12 BC 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 10 CC 00 03 AE 00 02 F2 02 96 03 5D 03 4A 7B 50 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F C9 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1B 6A 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 69 5B 84 00 00 00 00 00 00 11 2C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 11 CC 00 03 AD 00 03 07 02 BE 03 6F 03 56 7B 90 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F AC 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1C 73 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 64 6B 84 00 00 00 00 00 00 10 C8 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 12 CC 00 03 CD 00 03 28 03 4B 03 73 03 66 7C 00 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F A8 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 20 13 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 59 69 84 00 00 00 00 00 00 0F 9C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 13 CC 00 03 E5 00 03 04 03 26 03 80 03 76 7C 60 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F B3 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1E F1 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 5C 73 84 00 00 00 00 00 00 0F 9C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 14 CC 00 04 1E 00 02 C7 03 63 03 8A 03 7B 7C E0 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F B4 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1E FE 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 6B 80 84 00 00 00 00 00 00 10 64 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 15 CC 00 04 3F 00 03 55 03 5F 03 95 03 87 7E 30 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F B1 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 21 4D 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 65 98 84 00 00 00 00 00 00 0F 38 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 16 CC 00 04 70 00 03 70 03 6E 03 8F 03 98 80 38 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F C1 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 22 29 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 3E A1 84 00 00 00 00 00 00 0F 9C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 17 CC 00 04 2D 00 03 52 03 50 03 94 03 9E 82 78 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F C2 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 20 9E 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 4E 8A 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 18 CC 00 03 DF 00 03 03 02 D5 03 9F 03 AB 83 98 02 00 00 01 00 FF FF 15 0A 7D
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F CA 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1C E8 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 67 85 84 00 00 00 00 00 00 0E D4 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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71 01 03 01 01 19 CC 00 03 C1 00 03 12 02 D1 03 AC 03 B7 84 E0 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 00 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1D 63 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 66 95 84 00 00 00 00 00 00 0E 0C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 1A CC 00 04 25 00 03 67 02 EA 03 B3 03 C7 84 A0 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 43 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 1F A5 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 5E 9A 84 00 00 00 00 00 00 0D A8 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 1B CC 00 04 88 00 03 9A 03 5A 03 BA 03 D8 84 60 02 00 00 01 00 FF FF 15 0A 7A
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 75 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 22 9C 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 66 AD 84 00 00 00 00 00 00 0E D4 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 1C CC 00 04 BB 00 03 C4 03 B5 03 C6 03 DE 83 F8 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 8E 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 25 4F 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 4E B0 84 00 00 00 00 00 00 0F 38 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 1D CC 00 04 AA 00 03 E0 03 8F 03 D6 03 E7 82 B0 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 8B 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 24 B7 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 50 AA 84 00 00 00 00 00 00 10 C8 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 1E CC 00 04 4B 00 03 EE 02 D8 03 ED 03 F0 81 F8 02 00 00 01 00 FF FF 15 0A 7D
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 70 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 21 87 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 48 A3 84 00 00 00 00 00 00 11 90 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 1F CC 00 04 03 00 03 D8 03 2B 03 F6 03 FA 80 E0 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 4B 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 22 C6 08 00 07 21 FF 03 FF FF FF FF FF 12 7C 6C 5D 91 84 00 00 00 00 00 00 11 90 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 20 CC 00 04 E7 00 03 D5 03 BA 04 03 04 06 80 70 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 34 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 25 A7 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 5A 8F 84 00 00 00 00 00 00 10 64 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 21 CC 00 05 0C 00 04 02 03 F9 04 0B 04 16 80 10 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 22 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 27 C0 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 66 83 84 00 00 00 00 00 00 10 C8 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 22 CC 00 05 30 00 04 13 04 17 04 17 04 1C 80 00 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 13 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 28 AB 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 76 83 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 23 CC 00 05 33 00 04 18 04 1B 04 1C 04 1D 7F F8 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 0D 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 28 D4 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 75 80 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 24 CC 00 05 36 00 04 1B 04 1C 04 1B 04 18 7F E0 02 00 00 01 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 09 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 28 E1 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 77 7C 84 00 00 00 00 00 00 10 64 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 25 CC 00 05 3C 00 04 21 04 1E 04 24 04 1F 7F E0 00 00 00 00 00 00 FF FF 15 0A 7B
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 01 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 29 07 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 7B 7E 84 00 00 00 00 00 00 10 64 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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71 01 03 01 01 26 CC 00 05 3E 00 04 24 04 1D 04 29 04 1E 7F D0 00 00 00 00 00 FF FF 15 0A 7B
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FF 29 24 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 77 80 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 27 CC 00 05 40 00 04 29 04 22 04 29 04 22 7F F0 00 00 00 00 00 FF FF 15 0A 7D
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F F9 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 29 44 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 74 80 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 28 CC 00 05 42 00 04 2A 04 26 04 25 04 25 7F D0 00 00 00 00 00 FF FF 15 0A 7D
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FF 29 63 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 70 81 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 29 CC 00 05 4A 00 04 2C 04 2B 04 27 04 2A 7F D0 00 00 00 00 00 FF FF 15 0A 7D
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F F9 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 29 80 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 76 81 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 2A CC 00 05 4D 00 04 2B 04 2C 04 2B 04 31 7F E8 00 00 00 00 00 FF FF 15 0A 7E
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 0F F9 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 29 97 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 79 84 84 00 00 00 00 00 00 0F 9C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 2B CC 00 05 4C 00 04 30 04 2F 04 2F 04 34 80 00 00 00 00 00 FF FF 15 0A 7E
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FF 29 AE 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 78 80 84 00 00 00 00 00 00 0F 9C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 2C CC 00 05 4E 00 04 2C 04 2E 04 34 04 34 7F F8 00 00 00 00 00 FF FF 15 0A 7E
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 00 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 29 A5 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 74 7C 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 2D CC 00 05 5C 00 04 31 04 33 04 35 04 32 80 00 00 00 00 00 FF FF 15 0A 7F
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 03 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 29 C8 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 7A 80 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 2E CC 00 05 56 00 04 38 04 34 04 3A 04 35 80 00 00 00 00 00 FF FF 15 0A 7F
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 06 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 29 E4 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 7D 80 84 00 00 00 00 00 00 0F 9C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 2F CC 00 05 58 00 04 3D 04 34 04 40 04 37 80 08 00 00 00 00 FF FF 15 0A 80
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 0B 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 2A 05 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 76 81 84 00 00 00 00 00 00 10 00 00 00 00
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71 01 03 01 01 30 CC 00 05 6D 00 04 45 04 3C 04 41 04 39 80 10 00 00 00 00 FF FF 15 0A 82
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FF 2A 54 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 72 86 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 01 31 CC 00 05 47 00 04 45 04 3C 04 40 04 3E 80 28 00 00 00 00 FF FF 15 0A 83
FF 00 00 00 00 00 07 00 FF 00 00 00 00 00 10 0E 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 2A 49 08 00 07 21 FF 03 FF FF FF FF FF 02 7C 6C 73 82 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 02 00 CC 00 07 49 00 00 B3 00 AC 00 A6 00 BC 83 E8 00 00 00 00 FF FF 2D 16 84
FF 22 00 00 00 00 07 00 FF 00 00 00 00 00 12 14 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 BF 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 87 82 84 00 00 00 00 00 00 0F 9C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 07 09 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 89 77 84 00 00 00 00 00 00 10 00 00 00 00
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71 01 03 01 02 02 CC 00 07 05 00 00 BB 00 A9 00 AD 00 C2 85 D0 00 00 00 00 00 00 FF FF 33 19 84
FF 26 00 00 00 00 07 00 FF 00 00 00 00 00 12 12 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 ED 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 82 70 84 00 00 00 00 00 00 10 C8 00 00 00
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00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 06 C9 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 8B 93 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 06 C6 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 7A 88 84 00 00 00 00 00 00 10 64 00 00 00
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71 01 03 01 02 06 CC 00 06 E2 00 00 B7 00 AA 00 A8 00 BA 85 D0 00 00 00 00 00 00 FF FF 33 19 84
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FF 06 E3 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 8C 8D 84 00 00 00 00 00 00 10 64 00 00 00
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71 01 03 01 02 07 CC 00 06 F2 00 00 B7 00 9C 00 9D 00 B7 85 A8 00 00 00 00 00 00 FF FF 33 19 84
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FF 06 9E 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 8B 85 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 06 81 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 87 91 84 00 00 00 00 00 00 10 C8 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 02 09 CC 00 06 E0 00 00 AD 00 AE 00 A4 00 B1 85 30 00 00 00 00 00 00 FF FF 33 19 84
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FF 06 A9 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 7F 8C 84 00 00 00 00 00 00 11 2C 00 00 00
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FF 06 C2 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 86 91 84 00 00 00 00 00 00 11 90 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 26 00 00 00 00 07 00 FF 00 00 00 00 00 11 6E 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 AD 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 8A 87 84 00 00 00 00 00 00 11 90 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 26 00 00 00 00 07 00 FF 00 00 00 00 00 11 52 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 90 08 00 07 22 30 03 45 48 47 FF FF 20 7D 70 8A 84 84 00 00 00 00 00 00 10 C8 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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71 01 03 01 02 0E CC 00 06 BB 00 00 B4 00 A1 00 A2 00 B6 84 20 00 00 00 00 00 FF FF 33 19 84
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FF 06 A9 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 89 8A 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 26 00 00 00 00 07 00 FF 00 00 00 00 00 11 3B 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 9E 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 8E 89 84 00 00 00 00 00 00 10 64 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 02 10 CC 00 06 C1 00 00 B0 00 A2 00 A1 00 AA 83 20 00 00 00 00 00 00 FF FF 33 19 83
FF 26 00 00 00 00 07 00 FF 00 00 00 00 00 11 36 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 90 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 88 89 84 00 00 00 00 00 00 10 00 00 00 00
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71 01 03 01 02 11 CC 00 06 B6 00 00 AE 00 A2 00 A2 00 B1 83 68 00 00 00 00 00 00 FF FF 33 19 83
FF 27 00 00 00 00 07 00 FF 00 00 00 00 00 11 34 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 8C 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 83 8A 84 00 00 00 00 00 00 10 00 00 00 00
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71 01 03 01 02 12 CC 00 06 B3 00 00 AE 00 A2 00 9C 00 AE 83 80 00 00 00 00 00 00 FF FF 33 19 83
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71 01 03 01 02 13 CC 00 06 A4 00 00 AC 00 A8 00 9D 00 A6 83 90 00 00 00 00 00 00 FF FF 33 19 83
FF 27 00 00 00 00 07 00 FF 00 00 00 00 00 11 37 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 9B 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 8F 88 84 00 00 00 00 00 00 10 00 00 00 00
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FF 06 68 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 87 84 84 00 00 00 00 00 00 10 00 00 00 00
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71 01 03 01 02 15 CC 00 06 8E 00 00 A9 00 A5 00 9C 00 AA 83 70 00 00 00 00 00 00 FF FF 33 1A 82
FF 28 00 00 00 00 07 00 FF 00 00 00 00 00 11 37 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 87 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 8C 93 84 00 00 00 00 00 00 10 00 00 00 00
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71 01 03 01 02 16 CC 00 06 8C 00 00 A5 00 A3 00 9C 00 A6 83 38 00 00 00 00 00 00 FF FF 34 1A 82
FF 2A 00 00 00 00 07 00 FF 00 00 00 00 00 11 3A 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 61 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 8D 8F 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 02 17 CC 00 06 7E 00 00 A7 00 A1 00 9B 00 AA 83 50 00 00 00 00 00 00 FF FF 35 1A 82
FF 2B 00 00 00 00 07 00 FF 00 00 00 00 00 11 3A 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
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FF 2C 00 00 00 00 07 00 FF 00 00 00 00 00 11 3B 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 5F 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 91 82 84 00 00 00 00 00 00 10 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

71 01 03 01 02 19 CC 00 06 6A 00 00 A6 00 9E 00 93 00 A2 83 A8 00 00 00 00 00 00 FF FF 36 1B 80
FF 2C 00 00 00 00 07 00 FF 00 00 00 00 00 11 4A 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 06 4B 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 8D 83 84 00 00 00 00 00 00 0E D4 00 00 00
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71 01 03 01 02 1A CC 00 06 50 00 00 A0 00 97 00 90 00 A0 84 10 00 00 00 00 00 00 FF FF 36 1B 80
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FF 06 0C 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 87 8C 84 00 00 00 00 00 00 0E D4 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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71 01 03 01 02 1B CC 00 06 28 00 00 9D 00 AC 00 8E 00 A2 85 08 00 00 00 00 00 FF FF 36 1B 80
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00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 05 71 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 92 86 84 00 00 00 00 00 00 0F 9C 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 04 F3 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 89 93 84 00 00 00 00 00 00 0E 70 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 38 00 00 00 00 07 00 FF 00 00 00 00 00 13 1D 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 04 8E 08 00 07 22 30 03 45 48 48 FF FF 20 7D 70 87 95 84 00 00 00 00 00 00 0E 70 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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71 01 03 01 02 28 CC 00 04 70 00 00 73 00 63 00 66 00 7B 86 48 00 00 00 00 00 00 FF FF 3C 1E 7D
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00 00 00 00 00 00 00 00 00 00 00 00 FF FF

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FF 14 00 00 00 00 07 00 FF 00 00 00 00 00 13 C7 00 0F 1F FF 00 FF 60 03 FF FF 78 FF FF FF FF
FF 03 4D 08 00 07 22 30 03 45 48 48 FF FF 20 80 70 80 8F 84 00 00 00 00 00 00 0F 38 00 00 00
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71 01 03 01 02 30 CC 00 03 44 00 00 5D 00 46 00 55 00 6A 86 80 00 00 00 00 00 00 00 00 FF FF 24 11 7D
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02 02 01 00 02 03 03 03 03 04 04 05 05 04 04 03 03 01 01 01 00 00 00 00 00 FF FF FF 00 00 00
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12 11 0F 0D 0B 08 01 FA EF E3 DB D1 D0 D3 D5 D7 D8 DA E5 EC ED F2 F7 FD FE FD 00 02 02 02 00
FF FE FF FE FD FF 01 02 06 07 09 0B 0C 0D 0E 0D 0E 0D 0C 0A 08 07 04 03 03 03 02 01 00 00 00
FF FF FF FF FF FF 00 00 00 00 00 01 02 03 03 04 05 05 05 06 05 05 04 06 07 06 05 06 06 05 04
03 03 01 02 02 02 02 02 04 04 03 05 05 07 07 07 08 09 09 09 0A 0A 0A 09 09 09 08 07 06 06 04
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71 01 03 04 03 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
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62 F1 0B 22 00 00 00 07 1F AA 00 B6 88 07 00 04 00 00 00 07 01 02 3F 10 4F FD 26 C7 00 02 00
00 07 39 21 03 00 CF 37 00 8E 67 18 06 00 02 B0 FE FE 42 00 54 3C 00 00 00 00 0C 5A 03 00 00
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59 02 99 50 CC 00 08 A2 07 00 08 A1 DD 16 09 80 28 13 89 80 10 13 89 80 11 13 89 A7 68 87 89
80 29 13 89 80 7F 13 89 80 7E 13 89 80 02 13 89 80 01 13 89 C1 40 00 08 A1 2D 13 08 C1 21 00
08 D4 2A 00 09 A7 67 87 89 A7 64 87 89 A7 65 87 89 A7 61 87 89 A7 62 87 89 80 50 13 89 80 21
13 89 80 20 13 89
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59 06 50 CC 00 08 01 00 3C 28 3C 28 01 02 02 01 D4 01 38 AC 54 01 39 1C 78
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59 06 A2 07 00 08 01 00 3C 28 3C 28 01 02 02 01 D4 01 38 AC 54 01 39 1C 79
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59 06 A1 DD 16 09 01 00 3C 28 3C 28 03 00 02 01 D0 01 39 0A CC FF FF FF FF
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59 06 80 28 13 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 5F FF FF FF FF
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59 06 80 10 13 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 59 FF FF FF FF
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59 06 80 11 13 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 56 FF FF FF FF
59 06 A7 68 87 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 56 FF FF FF FF
59 06 80 29 13 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 56 FF FF FF FF
59 06 80 7F 13 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 56 FF FF FF FF
59 06 80 7E 13 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 56 FF FF FF FF
59 06 80 02 13 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 55 FF FF FF FF
59 06 80 01 13 89 01 00 3C 28 3C 28 01 00 02 03 5C 01 38 AC 55 FF FF FF FF
59 06 C1 40 00 08 01 00 3C 28 3C 28 09 03 02 00 00 01 38 AD 77 01 38 DE 96
59 06 A1 2D 13 08 01 00 3C 28 3C 28 01 02 02 03 50 01 38 AC 6B 01 39 77 09
59 06 C1 21 00 08 01 00 3C 28 3C 28 01 03 02 01 C4 01 38 AC 63 01 39 18 8D
59 06 D4 2A 00 09 01 00 FF FF FF FF 02 00 02 00 0C 01 39 77 19 FF FF FF FF
59 06 A7 67 87 89 01 00 FF FF FF FF 01 00 02 00 0C 01 39 77 0D FF FF FF FF
59 06 A7 64 87 89 01 00 FF FF FF FF 01 00 02 00 0C 01 39 77 0D FF FF FF FF
59 06 A7 65 87 89 01 00 FF FF FF FF 01 00 02 00 0C 01 39 77 0C FF FF FF FF
59 06 A7 61 87 89 01 00 FF FF FF FF 01 00 02 00 0C 01 39 77 0C FF FF FF FF
59 06 A7 62 87 89 01 00 FF FF FF FF 01 00 02 00 0C 01 39 77 0C FF FF FF FF
59 06 80 50 13 89 01 00 FF FF FF FF 01 00 02 00 0D 01 39 77 0C FF FF FF FF
59 06 80 21 13 89 01 00 FF FF FF FF 01 00 02 00 0D 01 39 77 0F FF FF FF FF
59 06 80 20 13 89 01 00 3A B4 FF FF 63 00 02 00 0D 01 32 DE C2 FF FF FF FF
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February 2022



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

