



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



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DOT HS 812 566

June 2018

**Special Crash Investigations  
On-Site Small Overlap/Oblique  
Impact Investigation  
Vehicle: 2015 Chrysler 200  
Location: Missouri  
Crash Date: September 2016**

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants. Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicles or their safety systems.

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

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<p>15. <i>Supplementary Notes</i> On-site small overlap/oblique impact investigation involving a 2015 Chrysler 200.</p>			
<p>16. <i>Abstract</i> The interest of this on-site investigation is the small overlap/oblique impact to a 2015 Chrysler 200 and the injuries sustained by the driver. This crash occurred on a straight, undivided, two-lane, rural State highway. The Chrysler was a four-door sedan equipped with multi-stage frontal air bags, driver and front row passenger knee air bags, front seat-mounted side impact air bags, and rollover/side impact inflatable curtain (IC) air bags that were compliant with Federal Motor Vehicle Safety Standard (FMVSS) No. 226, Ejection Mitigation. An unbelted 31-year-old male driver and belted 3-year-old female second row right passenger, who was seated in an unknown make/model booster seat, occupied the vehicle. The Chrysler was traveling west in the westbound lane. A 2003 Ford Taurus was traveling east in the eastbound lane. The Chrysler entered the Fords's travel lane and the front left corner impacted the front left corner of the Ford (event 1). The impact resulted in deployment of both of the Chrysler's frontal and knee air bags and deployment of the left IC and driver's seat-mounted side impact air bags. The Ford rotated counterclockwise following the impact and departed the south side of the roadway where it rolled over (event 2), right side leading, three quarter turns. The right plane struck a woven wire fence (event 3) and the undercarriage struck a sign (event 4) during the rollover. The vehicle came to final rest on its left plane heading northeast. The Chrysler also rotated counterclockwise from the initial impact and came to final rest in the eastbound travel lane heading southeast. The driver of the Chrysler sustained police-reported "A" (incapacitating) injuries and the second-row right passenger sustained police-reported "B" (non-incapacitating) injuries. Both occupants were transported by ambulance to a hospital where they were treated in the emergency room and released. A belted 66-year-old female driver occupied the Ford. She sustained police-reported "A" (incapacitating) injuries and was transported by ambulance to a hospital. Her injuries and level of treatment are not known. Both vehicles were towed from the crash scene due to damage.</p>			
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## TABLE OF CONTENTS

	<u>Page No.</u>
Background.....	1
Crash Summary.....	2
Crash Site .....	2
Pre-Crash.....	2
Crash .....	2
Post-Crash.....	3
2015 Chrysler 200 Description .....	4
Exterior Damage .....	4
Damage Classification .....	4
Event Data Recorder .....	4
Most Recent Event.....	5
Interior Damage .....	5
Manual Restraint Systems.....	5
Supplemental Restraint Systems.....	6
Driver Demographics.....	7
Driver Injuries.....	7
Second Row Right Occupant Demographics.....	8
Second Row Right Occupant Kinematics.....	9
2003 Ford Taurus Description .....	9
Exterior Damage .....	9
Exterior Damage Event 1 .....	9
Damage Classification Event 1 .....	9
Exterior Damage Events 2 – 4.....	9
Damage Classification Events 2 – 4 .....	10
Occupant Data.....	10
Crash Diagram .....	11
Crash Diagram Detail View.....	12
Appendix A 2015 Chrysler 200 .....	A-1

**INDIANA UNIVERSITY**  
**TRANSPORTATION RESEARCH CENTER**  
**ON-SITE SMALL OVERLAP/OBLIQUE IMPACT INVESTIGATION**  
CASE NUMBER - IN16026  
LOCATION - MISSOURI  
VEHICLE - 2015 CHRYSLER 200  
CRASH DATE - SEPTEMBER 2016

**BACKGROUND**

The interest of this on-site investigation is the small overlap/oblique impact to a 2015 Chrysler 200 (**Figure 1**) and the injuries sustained by the driver. This crash investigation was initiated by the National Highway Traffic Safety Administration on November 8, 2016, after the crash was identified by the Special Crash Investigation (SCI) team at the Indiana University Transportation Research Center through an online search of Missouri crash report abstracts. This investigation was assigned on November 10, 2016, when permission for the vehicle inspection was obtained from the insurance company. This crash occurred in September 2016, at 1115 hours, in Missouri and was investigated by a local police agency. The crash involved the Chrysler and a 2002 Ford Taurus. The Chrysler, Ford, and crash scene were inspected on November 15 and 16, 2016. The driver of the Chrysler refused the SCI request for an interview.



**Figure 1:** The damaged 2015 Chrysler 200

This crash occurred on a straight, undivided, two-lane, rural State highway. The Chrysler was a four-door sedan equipped with multi-stage frontal air bags, driver and front row passenger knee air bags, front seat-mounted side impact air bags, and rollover/side impact inflatable curtain (IC) air bags that were compliant with Federal Motor Vehicle Safety Standard (FMVSS) No. 226, Ejection Mitigation. An unbelted 31-year-old male driver and belted 3-year-old female second row right passenger, who was seated in an unknown make/model booster seat, occupied the vehicle. The Chrysler was traveling west in the westbound lane. The Ford was traveling east in the eastbound lane. The Chrysler entered the Ford's travel lane and the front left corner struck the front left corner of the Ford (event 1). The impact resulted in deployment of both of the Chrysler's frontal and knee air bags and deployment of the left IC and driver's seat-mounted side impact air bags. The Ford rotated counterclockwise following the impact and departed the south side of the roadway where it rolled over (event 2), right side leading, three quarter turns. The right plane struck a woven wire fence (event 3) and the undercarriage struck a sign (event 4) during the rollover. The vehicle came to final rest on its left plane heading northeast. The Chrysler also rotated counterclockwise from the initial impact and came to final rest in the eastbound travel lane heading southeast. The driver of the Chrysler sustained police-reported "A" (incapacitating) injuries

and the second-row right passenger sustained police-reported “B” (non-incapacitating) injuries. Both occupants were transported by ambulance to a hospital where they were treated in the emergency room and released. A belted 66-year-old female driver occupied the Ford. She sustained police-reported “A” (incapacitating) injuries and was transported by ambulance to a hospital. Her injuries and level of treatment are not known. Both vehicles were towed from the crash scene due to damage.

## CRASH SUMMARY

### *Crash Site*

This crash occurred during day time hours on a straight, undivided, two-lane, rural State highway. The weather conditions were clear with 16 kilometers (10 miles) visibility, north- northwest winds at 19 km/h (12 mph), a temperature of 18.8 °C (66 °F), and a dew point of 11.1 °C

(52 °F), according to local weather reports. The roadway traversed in an east/west direction had one 3.6 m (11.8 ft) wide lane in each direction. Each side of the roadway was bordered by a bituminous shoulder with rumble strip, a ditch, and a woven wire fence. The north and south shoulders were 1.6 m (5.2 ft) and 1.9 m (6.2 ft) wide, respectively. The roadway pavement markings consisted of solid white edge lines, a solid yellow center line for westbound traffic and a broken yellow centerline for eastbound traffic. The roadway surface was dry bituminous. The speed limit for each vehicle was 97 km/h (60 mph). The crash diagrams are included at the end of this report on pages 11 and 12.

### *Pre-Crash*

The Ford was traveling east in the eastbound lane and the driver intended to continue eastbound. The Chrysler was traveling west in the westbound lane (**Figure 2**) at an EDR-reported speed of 107 km/h (67 mph) at -5.0 sec prior to algorithm enable (AE). The vehicle then gradually decelerated with the brake switch circuit reported as “On” to -3.2 sec at which point the speed was 98 km/h (61 mph). The EDR-reported steering input at -3.2 sec also indicated a gradual left steering input, suggesting the driver was possibly distracted or beginning to fall asleep. The vehicle continued to decelerate to 84 km/h (52 mph) at -0.1 sec, which was the end of the pre-crash recording. A witness, who was traveling behind the Chrysler, stated that the Chrysler drifted into the Ford’s travel lane.



**Figure 2:** Westbound approach of the Chrysler

### *Crash*

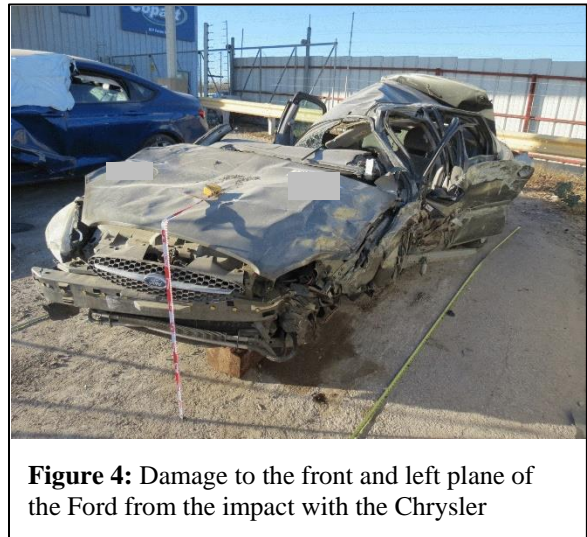
The front left corner of the Chrysler (**Figure 3**) struck the front left corner of the Ford (**Figure 4**, event 1). The impact occurred 2.2 m (7.2 ft) into the Ford’s travel lane. The force direction on the Chrysler was within the 12 o’clock sector and the impact resulted in stage 1 - 3 deployment of both of the vehicle’s frontal air bags. Both knee, left IC, and driver’s seat-mounted side

impact air bags also deployed. The Chrysler's EDR reported the maximum longitudinal and lateral velocity changes as -30 km/h (-18.6 mph) and 11 km/h (6.8 mph), respectively. The "Missing Vehicle" algorithm<sup>1</sup> of the WinSMASH program calculated the vehicle's total delta-V as 36 km/h (22 mph). The longitudinal and lateral velocity changes were -35 km/h (-22 mph) and 6 km/h (4 mph), respectively. WinSMASH calculated total delta-V for the Ford as 40 km/h (25 mph). The longitudinal and lateral velocity changes were -35 km/h (-22 mph) and 20 km/h (12 mph), respectively. The WinSMASH results should be considered borderline since a crush profile for the Chrysler could not be obtained.



**Figure 3:** Damage to the front plane of the Chrysler from impact with the front plane of the Ford

The impact caused the Ford to rotate counterclockwise and depart the south side of the roadway as it rotated approximately 70 degrees and traveled 9.0 m (29.5 ft). The vehicle then rolled over (event 2), right side leading, three quarter turns. During the rollover the right plane of the vehicle struck a woven wire fence (event 3) and the undercarriage struck a sign (event 4) as the vehicle came to final rest on its left plane heading northeast. The vehicle traveled a total distance of 7.8 m (25.5 ft) during the rollover. The total distance traveled from the impact with the Chrysler to final rest was 16.8 m (55.1 ft). The Chrysler rotated CCW 155 degrees following the initial impact as it traveled 18.2 m (59.7 ft), coming to final rest in the eastbound lane heading southwest.



**Figure 4:** Damage to the front and left plane of the Ford from the impact with the Chrysler

### ***Post-Crash***

The police were notified of the crash at 1126 hours and arrived on scene at 1138 hours. The driver of the Chrysler was out of the vehicle when emergency responders arrived, according to his medical records. It is not known if he exited the vehicle under his own power or with assistance, possibly from a passerby. It is not known how the second row right passenger exited the vehicle. The Chrysler's driver sustained police-reported "A" (incapacitating) injuries and the second row right passenger sustained police-reported "B" (non-incapacitating) injuries. Both occupants were transported by ambulance to a hospital. The Chrysler's driver and passenger were treated in the emergency room for moderate and minor severity injuries, respectively, and released. Emergency responders cut the Ford's left A- and B-pillars with a hydraulic rescue tool and displaced the roof to extricate the driver from the vehicle. He sustained police-reported "A" (incapacitating)

<sup>1</sup> The Chrysler's front bumper bar was missing from the vehicle and it was not possible to measure a crush profile, so the vehicle was treated as a missing vehicle for the WinSMASH reconstruction.

injuries and was transported by ambulance to a hospital. His injuries and level of treatment are not known. Both vehicles were towed from the crash scene due to damage.

## **2015 CHRYSLER 200 DESCRIPTION**

The Chrysler was an all-wheel drive, five-passenger, four-door sedan VIN: 1C3CCCDG2FNxxxxxx that was manufactured in October 2014. The vehicle was equipped with a 3.6-liter, V-6 engine, nine-speed automatic transmission with sport shift feature, four-wheel anti-lock brakes with electronic brake force distribution, brake assist, traction control, and electronic stability control (ESC). The vehicle was also equipped with multi-stage frontal air bags, driver and front row passenger knee air bags, front seat-mounted side impact air bags, and rollover/side impact IC air bags that were compliant to FMVSS No. 226, Ejection Mitigation. The vehicle was equipped with a tilt/telescoping steering column. The tilt feature was adjusted between the full-up and center positions and the telescoping feature was adjusted to the full-forward position. The specified wheelbase was 275 cm (107.9 in).

The vehicle manufacturer's recommended tire size was P235/45R18. The vehicle was equipped with Bridgestone Ecopia tires of the recommended size. The vehicle manufacturer's recommended cold tire pressure for the front and rear tires was 241 kPa (35 psi).

The front row was equipped with driver and passenger leather-covered bucket seats with adjustable head restraints. The second row was equipped with a leather-covered bench seat with folding backs and adjustable head restraints. The driver's seat track was adjusted between the middle and rear-most positions and the seat back was reclined 30 degrees aft of vertical. The second row seat and seat back was fixed.

## **EXTERIOR DAMAGE**

The entire front plane and front half of the left plane sustained direct and induced damage during the impact with the front plane of the Ford. The direct damage on the front plane of the Chrysler involved the left portion of the front bumper, headlamp/turn signal assembly, grille, and hood. The direct damage also extended down the left plane involving the fender, left front wheel, which was displaced from the vehicle, and the left front door. The direct damage to the front plane began at the left corner of the front bumper and was estimated to be 61 cm (24 in) long. The estimation was based on the direct damage to the hood since the bumper bar, bumper fascia, and most of the structure forward of the radiator were displaced from the vehicle and not present at the SCI vehicle inspection. Measurements of the crush to the front plane were also not possible due to these missing components.

### ***Damage Classification***

The Collision Deformation Classification (CDC) was 12FYEW2 (350 degrees).

## **EVENT DATA RECORDER**

The Chrysler's EDR was imaged with version 17.1 of the Bosch Crash Data Retrieval software and reported with version 17.6. The vehicle was without power and the data was imaged via direct

connection to the air bag control module. The EDR report is attached to the end of this report as [Appendix A](#).

The EDR recorded a deployment event, which was titled the “Most Recent Event” and a “Complete” file was recorded. The driver’s safety belt status was reported as “Unbuckled” and his seat track was not in the foremost position. The frontal air bag warning lamp was reported as “Off.” No diagnostic trouble codes were reported. The ignition cycles at the crash and when the data were imaged were reported as 5,370 and 5,372, respectively.

### ***Most Recent Event***

Deployment of stages 1 to 3 were reported for the driver’s and front row passenger’s frontal air bags. Both knee, left IC, and driver’s seat-mounted side impact air bags also deployed. The times from AE to deployment for stages 1 to 3 of the driver’s frontal air bag were 22, 25, and 172 msec, respectively. The times to deployment of stages 1 to 3 of the front passenger’s frontal air bag were reported as 22, 172, and 42 msec, respectively. No deployment times were reported for the knee, IC, or driver’s seat-mounted side impact air bag. The maximum longitudinal and lateral velocity changes were reported on the “System Status and Event” record as -30 km/h (-18.6 mph) and 11 km/h (6.8 mph), respectively occurring at 98 and 78 msec, respectively after AE.

## **INTERIOR DAMAGE**

The interior of the Chrysler sustained moderate damage from four intrusions into the driver’s seating position. The most severe involved the side panel forward of the A-pillar, lower left A-pillar, and the sill, which intruded laterally 13 cm (5.1 in), 11 cm (4.3 in), and 11 cm (4.3 in), respectively. The left A-pillar was scuffed, probably from contact by the driver’s head. There was no other discernable evidence of occupant contact and no deformation of the steering wheel. The windshield glazing and laminated left front window glazing were both cracked from impact forces. The remaining glazing was undamaged. The left front and left rear doors were jammed shut. The right front and right rear doors remained closed and operational.

## **MANUAL RESTRAINT SYSTEMS**

The front and second rows were equipped with three-point lap and shoulder safety belts with sliding latch plates. The front row safety belts were equipped with adjustable upper anchors and retractor-mounted safety belt pretensioners. The driver’s upper anchor was adjusted to the full-down position. Both front row safety belt pretensioners actuated during the crash. The second row was equipped with three-point lap and shoulder safety belts with sliding latch plates and fixed upper anchors.

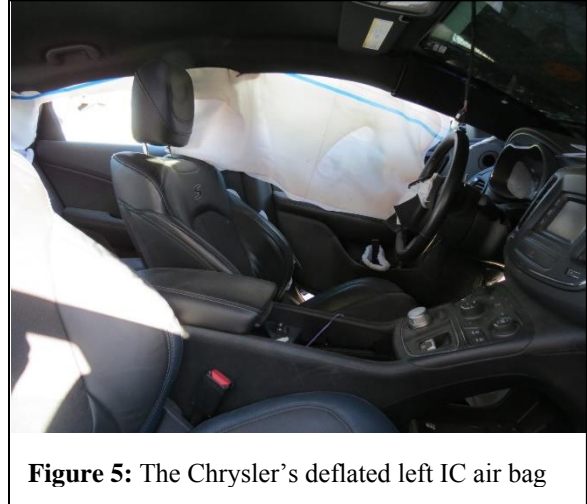
The driver’s safety belt webbing was drawn tautly into the retractor from pretensioner actuation indicating that the driver was not belted at the time of the crash. The vehicle’s EDR also reported the status of the driver’s safety belt as “Unbuckled.”

The second row right passenger was seated in an unknown make and model booster seat. The passenger was restrained by the lap and shoulder safety belt as evidenced by load marks from the belt webbing on the latch plate belt guide.

## SUPPLEMENTAL RESTRAINT SYSTEMS

The Chrysler was equipped with multi-stage frontal air bags, driver and front row passenger knee air bags, front seat-mounted side impact air bags, and rollover/side impact IC air bags that were compliant to FMVSS No. 226, “Ejection Mitigation.” Both frontal, knee, left IC, and the driver’s seat-mounted side impact air bags deployed during the impact with Ford.

The driver’s frontal air bag was located within the steering wheel hub. The air bag module had three cover flaps constructed of pliable vinyl. The top flap was 14 cm (5.5 in) wide at the horizontal tear seam and 7 cm (2.8 in) high. Each bottom flap was 7 cm (2.8 in) wide and 8 cm (3.1 in) high. The cover flaps opened at the designated tear seams and were undamaged. The deflated air bag was 60 cm (23.6 in) in diameter. Inspection of the air bag revealed no discernable evidence of occupant contact and no damage.



**Figure 5:** The Chrysler’s deflated left IC air bag

The passenger’s frontal air bag was located within the top of the instrument panel. The air bag module had two rectangular cover flaps constructed of pliable vinyl. Each flap was 28 cm (11.0 in) wide and 5.5 cm (2.2 in) high. The flaps opened at the designated tear seams and were undamaged. The air bag was 45 cm (17.7 in) wide at the top and 29 cm (11.4 in) wide at the bottom. The air bag sustained no damage.

The IC air bags were located along the roof side rail inside the headliner. The deflated left IC (**Figure 5**) extended from the A-pillar to the C-pillar and was 175 cm (68.9 in) wide, 42 cm (16.5 in) high and extended 30 cm (11.8 in) below the beltline in the front row. There was a gap between the front of the IC and the left A-pillar that was 13 cm (5.1 in) wide at the beltline and 10 cm (3.9 in) high. There was no discernable evidence of occupant contact to the IC. The portion of the IC in the second row had been cut by emergency responders

The driver’s seat-mounted side impact air bag was located within the outboard side of the seat back and deployed through a tear seam. The deflated air bag was 65 cm (25.6 in) high and 20 cm (7.9 in) wide. There was no discernable evidence of occupant contact and no damage.

The knee air bags were located within the lower instrument panel. The dimensions of the air bags were not documented. Neither air bag was damaged and there was no discernable evidence of occupant contact to the driver’s knee air bag.

**DRIVER DEMOGRAPHICS**

Age/Sex: 31 years/male  
 Height: Unknown  
 Weight: Unknown  
 Eyewear: Unknown  
 Seat Type: Bucket  
 Seat Track Position: Between middle and rear-most  
 Manual Restraint Usage: None  
 Usage Source: Vehicle inspection, EDR  
 Air Bags: Driver’s frontal, knee, seat-mounted side impact, and left IC air bags deployed  
 Alcohol/Drug Involvement: None  
 Egress from Vehicle: Removed by emergency responders  
 Transport from Scene: Ambulance  
 Medical Treatment: Treated in hospital emergency room and released

**DRIVER INJURIES**

Injury No.	Injury	AIS 2015	Involved Physical Components (IPC)	IPC Confidence
1	Concussion with brief loss of consciousness at scene with headache and no recollection of event in emergency room <sup>2</sup>	161002.2	A-pillar	Probable
2	Contusion left knee, not further specified	810402.1	Left lower instrument panel (includes knee bolster), left of steering column	Probable
3	Laceration left knee with minimal bleeding, not further specified	810602.1	Left lower instrument panel (includes knee bolster), left of steering column	Probable

Source: Emergency Room Records.

<sup>2</sup> EMS reported patient was repeating himself multiple times en route to facility; emergency room personnel considered patient’s level of consciousness as “confused.”

The driver was not restrained by the lap and shoulder safety belt. The seat track was adjusted between the middle and rear-most positions and the seat back was reclined 30 degrees aft of vertical. The front plane impact to the Chrysler resulted in a stage 1 - 3 deployment of the driver's frontal air bag. The driver's seat-mounted side impact, knee, and the left IC air bags also deployed. The impact displaced the driver forward and to the left and his face and chest loaded the frontal air bag and his knees loaded the knee air bag. The driver continued forward and to the left and his head contacted the left A-pillar resulting in a concussion with brief loss of consciousness. The driver's left knee loaded through the knee air bag and contacted the lower left instrument panel resulting in a contusion and laceration to the knee. The driver then rebounded and was redirected to the right as the vehicle rotated CCW and decelerated to final rest. The driver's medical records reported that he was out of the vehicle and walking when emergency responders arrived at the crash scene. The left front door was jammed shut, so the driver probably exited the vehicle through the right front door. It is not known if he exited under his own power or with assistance. The driver was transported by ambulance to a hospital where he was treated in the emergency room for moderate severity injuries and released.



**Figure 6:** Overview of occupant contact of left A- pillar (yellow tape), steering wheel, and instrument panel

## SECOND ROW RIGHT OCCUPANT DEMOGRAPHICS

Age/Sex:	3 years/female
Height:	Unknown
Weight:	Unknown
Eyewear:	Unknown
Seat Type:	Bench with folding back
Seat Track Position:	Fixed
Manual Restraint Usage:	Lap and shoulder safety belt and seated in booster seat
Usage Source:	Vehicle inspection
Air Bags:	Right IC, not deployed
Alcohol/Drug Involvement:	None
Egress from Vehicle:	Removed by emergency responders
Transport from Scene:	Ambulance
Medical Treatment:	Treated in hospital emergency room and released

Injury No.	Injury	AIS 2015	Involved Physical Components (IPC)	IPC Confidence
1	Abrasion anterior superior right upper chest	410202.1	Torso portion of safety belt system	Certain
2	Contusion right chest wall, not further specified	410402.1	Torso portion of safety belt system	Certain

Source: Emergency Room Records.

## SECOND ROW RIGHT OCCUPANT KINEMATICS

The second row right occupant was seated in a booster that was secured to the vehicle by the lap and shoulder safety belt. The front plane impact to the Chrysler displaced the occupant forward and to the left and she loaded the safety belt resulting in an abrasion and contusion to the right chest. She then rebounded and was redirected to the right as the vehicle rotated CCW and decelerated to final rest. The right rear door remained closed and operational and emergency responders probably removed her from the vehicle through that door. The occupant was transported by ambulance to a hospital where she was treated in the emergency room and released.

## 2003 FORD TAURUS DESCRIPTION

The Ford was a front wheel drive, five-occupant, four-door sedan with VIN 1FAFP53243Axxxxxx equipped with a 3.0-liter, V-6 engine and a four-speed automatic transmission. The vehicle was also equipped with advanced dual-stage frontal air bags and front safety belt pretensioners.

## EXTERIOR DAMAGE

### *Exterior Damage Event 1*

The Ford sustained direct and induced damage to the front and left planes from the impact with the front plane of the Chrysler. The direct damage involved the left corner of the front bumper and left headlamp/turn signal assembly. The direct damage then extended down the left plane involving the hood, fender, and both doors. The direct damage on the front plane began at the left corner of the front bumper and extended 30 cm (11.8 in) across the front plane. The Field L was 130 cm (51.2 in) long and began at the same location. Crush measurements were taken on the bumper bar and the maximum residual crush was 58 cm (22.8 in) occurring at C<sub>1</sub>. The crush values were: C<sub>1</sub> = 58 cm (22.8 in), C<sub>2</sub> = 49 cm (19.3 in), C<sub>3</sub> = 36 cm (14.2 in), C<sub>4</sub> = 23 cm (9.1 in), C<sub>5</sub> = 7 cm (2.8 in), C<sub>6</sub> = 0 cm.

### *Damage Classification Event 1*

The CDC was 11FLEE9 (330 degrees).

### *Exterior Damage Events 2 – 4*

The vehicle sustained damage to the top and both side planes during the rollover (event 2). The right plane sustained scratches on the right quarter panel, right corner of the back bumper, right

rear door, (the right front door was missing from the vehicle), and fender from both ground contact and woven wire fence impact (event 3). There was also damage from contact with fence posts to the right quarter panel and right fender. The undercarriage probably sustained minor scratches from the impact with the sign (event 4).

***Damage Classification Events 2 – 4***

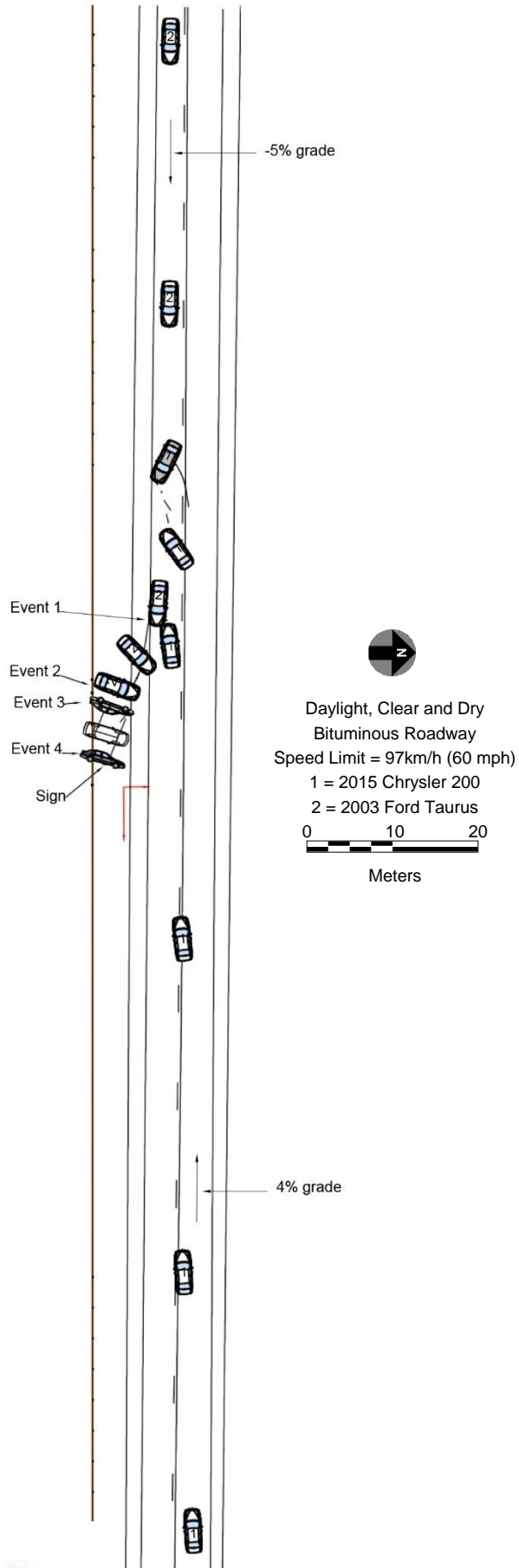
The CDC for the rollover (event 2) was 00TDDO2. The severity of the damage was minor. The CDC for the fence impact (event 3) that occurred during the rollover was 00RDAW2. The CDC for the undercarriage impact (event 4) that occurred during the rollover was estimated to be 00UYDN1.

**OCCUPANT DATA**

The driver (66-year-old female) was restrained by a lap and shoulder safety belt according to the police crash report. She sustained police-reported “A” (incapacitating) injuries and was transported by ambulance to a hospital. Her injuries and level of treatment are not known.

# CRASH DIAGRAM

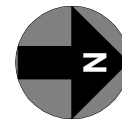
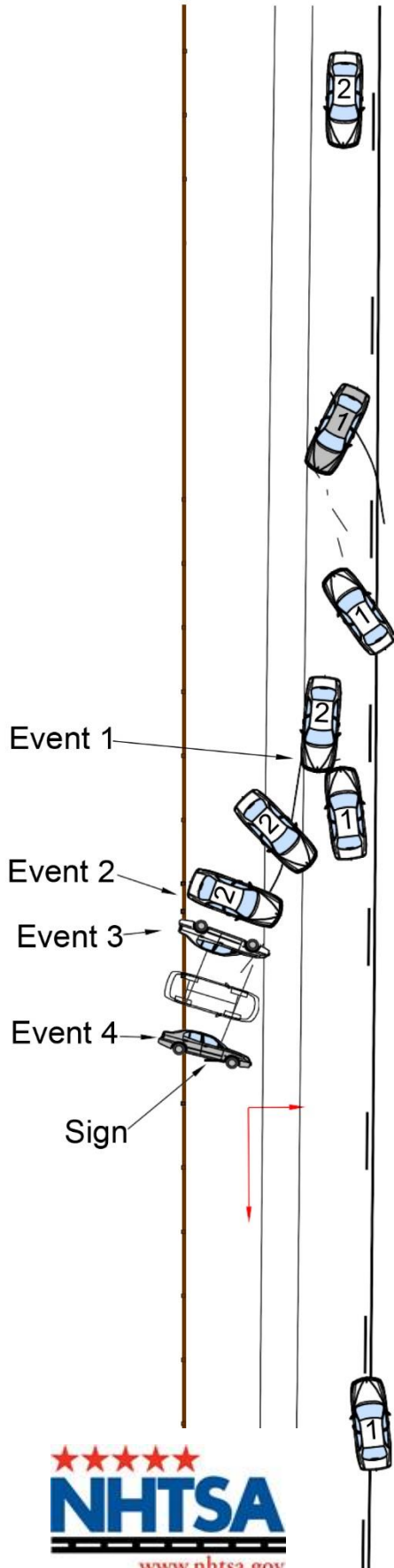
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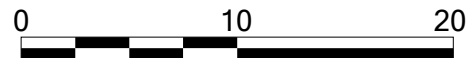
# CRASH DIAGRAM DETAIL VIEW

IN16026



Daylight, Clear and Dry  
Bituminous Roadway  
Speed Limit = 97km/h (60 mph)

1 = 2015 Chrysler 200  
2 = 2003 Ford Taurus



Meters



## **APPENDIX A 2015 CHRYSLER 200**

### **Event Data Recorder (EDR) Report<sup>1</sup>**

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<sup>1</sup> The Event Data Recorder (EDR) report published as part of this technical report is the software version of the Bosch CDR Tool at the time of publication. The CDR report contained within the associated CISSWEB application may be of a later software version of the Bosch CDR Tool and 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	1C3CCCDG2FN*****
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	IN16026_V1_ACM.CDRX
Saved on	
Imaged with CDR version	Crash Data Retrieval Tool 17.1
Imaged with Software Licensed to (Company Name)	Company Name information was removed when this file was saved without VIN sequence number
Reported with CDR version	Crash Data Retrieval Tool 17.6
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
Event(s) recovered	Most Recent 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.
- For Fiat vehicles, the "Read VIN from Vehicle" feature in the CDR Tool will not work. The VIN will have to be manually entered.
- 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.
- 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.

- For the 2014-2017 MY Jeep Grand Cherokee and Dodge Durango, a non-deployment event will be stored with activation of the Active Head Restraints.

#### 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, 3<sup>rd</sup> 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. 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 5<sup>th</sup> percentile female adult crash dummy, including an empty seat; "Not Child" indicates anything weighing the same as or more than a 5<sup>th</sup> 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.
- System Voltage at Event, ACM - Voltage at the ACM as measured by the ACM.
- System Voltage at Event, Bussed - 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.
  - 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.
- 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.
- 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 in the Deployment Command Data section of the report indicates that the ACM commanded the deployment /activation

of the associated device.

#### 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
  - +/- 300 deg/sec for TRW ACMs
  - +/- 290 for 2008-2017 minivans and 2009-2017 Dodge Journey
  - +/- 340 deg/sec for 2017 MY Chrysler Pacifica and new 2017 MY Jeep Compass
- For the 2017 MY Chrysler Pacifica and new 2017 MY Jeep Compass:
  - t0 for the peripheral sensors is the same as the t0 for the delta V
  - Internal y acceleration is only stored when the rollover sensing algorithm has triggered storage of the EDR event
- For the 2017 MY Chrysler Pacifica and new 2017 MY Jeep Compass:
  - 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.
- (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.
- 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.
- Cruise Control:
  - 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.
- 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 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 for 5 seconds to disable the ESC System. "Enabled" indicates that the ESC button has not been pressed for 5 seconds and thus the ESC System is enabled.
  - 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 Throttle, % Full - This indicates the actual position of the Engine Throttle blade.
  - 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 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 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 - This indicates the current transmission gear.
  - Master Cylinder Pressure - This indicates the brake pressure applied to the brakes by the driver.
  - PCM MIL - This indicates the PCM fault indicator lamp status. It will only be "On" when there is a fault in the PCM. 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 depressed.
  - Speed, Vehicle Indicated - This indicates the average of the drive wheels. The accuracy of the recorded Speed, Vehicle Indicated will be affected if the vehicle had the tire size or the final drive axle ratio changed from the factory build specifications.
  - 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:
        - 2014-2017 MY Ram
        - 2013-2017 MY Jeep Wrangler
        - 2013 MY Jeep Grand Cherokee
        - 2013 MY Dodge Durango
        - 2013-2014 MY Dodge Challenger
        - 2013-2016 MY Chrysler Town and Country
        - 2013-2017 MY Dodge Grand Caravan
        - 2015-2017 MY Fiat 500
    - Wheel Speed, XX - This indicates the speed value (in revolutions per minute) 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:

- Jeep Renegade and Alfa Romeo Giulia are only CDR supported in the NAFTA market.

03002\_Chrysler\_r034

### System Status at Retrieval

Original VIN	1C3CCCDG2FN*****
Ignition Cycle, Download	5372
ACM Part Number	68253727AB
ACM Serial Number	TNXMF275401567
ACM Supplier	TRW
ACM Supply Voltage at Time of Retrieval	11.6

### System Configuration at Retrieval

Configured for Rollover Sensing	Yes
Configured for Driver Frontal Airbag Squib(s)	Yes
Configured for Driver Knee Airbag	Yes
Configured for Driver Retractor Pretensioner	Yes
Configured for Driver Anchor Pretensioner	Yes
Configured for Driver Seatbelt Load Limiter	Yes
Configured for Passenger Frontal Airbag Squib(s)	Yes
Configured for Passenger Knee Airbag	Yes
Configured for Passenger Retractor Pretensioner	Yes
Configured for Passenger Anchor Pretensioner	Yes
Configured for Passenger Seatbelt Load Limiter	Yes
Configured for Left Side Seat Airbag	Yes
Configured for Left Side Curtain Airbag	Yes
Configured for 2nd Row Left Side Seat Airbag	No
Configured for Right Side Seat Airbag	Yes
Configured for Right Side Curtain Airbag	Yes
Configured for 2nd Row Right Side Seat Airbag	No
Configured for Driver Seat Seatbelt Switch	Yes
Configured for Driver Seat Track Position Sensor	Yes
Configured for Passenger Seat Seatbelt Switch	Yes
Configured for Passenger Seat Track Position Sensor	Yes
Configured for Passenger Occupant Classification Module	Yes

### System Configuration at Event (Most Recent Event)

Event Number	1
Configured for Rollover Sensing	Yes
Configured for Driver Frontal Airbag Squib(s)	Yes
Configured for Driver Knee Airbag	Yes
Configured for Driver Retractor Pretensioner	Yes
Configured for Driver Anchor Pretensioner	Yes
Configured for Driver Seatbelt Load Limiter	Yes
Configured for Passenger Frontal Airbag Squib(s)	Yes
Configured for Passenger Knee Airbag	Yes
Configured for Passenger Retractor Pretensioner	Yes
Configured for Passenger Anchor Pretensioner	Yes
Configured for Passenger Seatbelt Load Limiter	Yes
Configured for Left Side Seat Airbag	Yes
Configured for Left Side Curtain Airbag	Yes
Configured for 2nd Row Left Side Seat Airbag	No
Configured for Right Side Seat Airbag	Yes
Configured for Right Side Curtain Airbag	Yes
Configured for 2nd Row Right Side Seat Airbag	No
Configured for Driver Seat Seatbelt Switch	Yes
Configured for Driver Seat Track Position Sensor	Yes
Configured for Passenger Seat Seatbelt Switch	Yes
Configured for Passenger Seat Track Position Sensor	Yes
Configured for Passenger Occupant Classification Module	Yes

### System Status at Event (Most Recent Event)

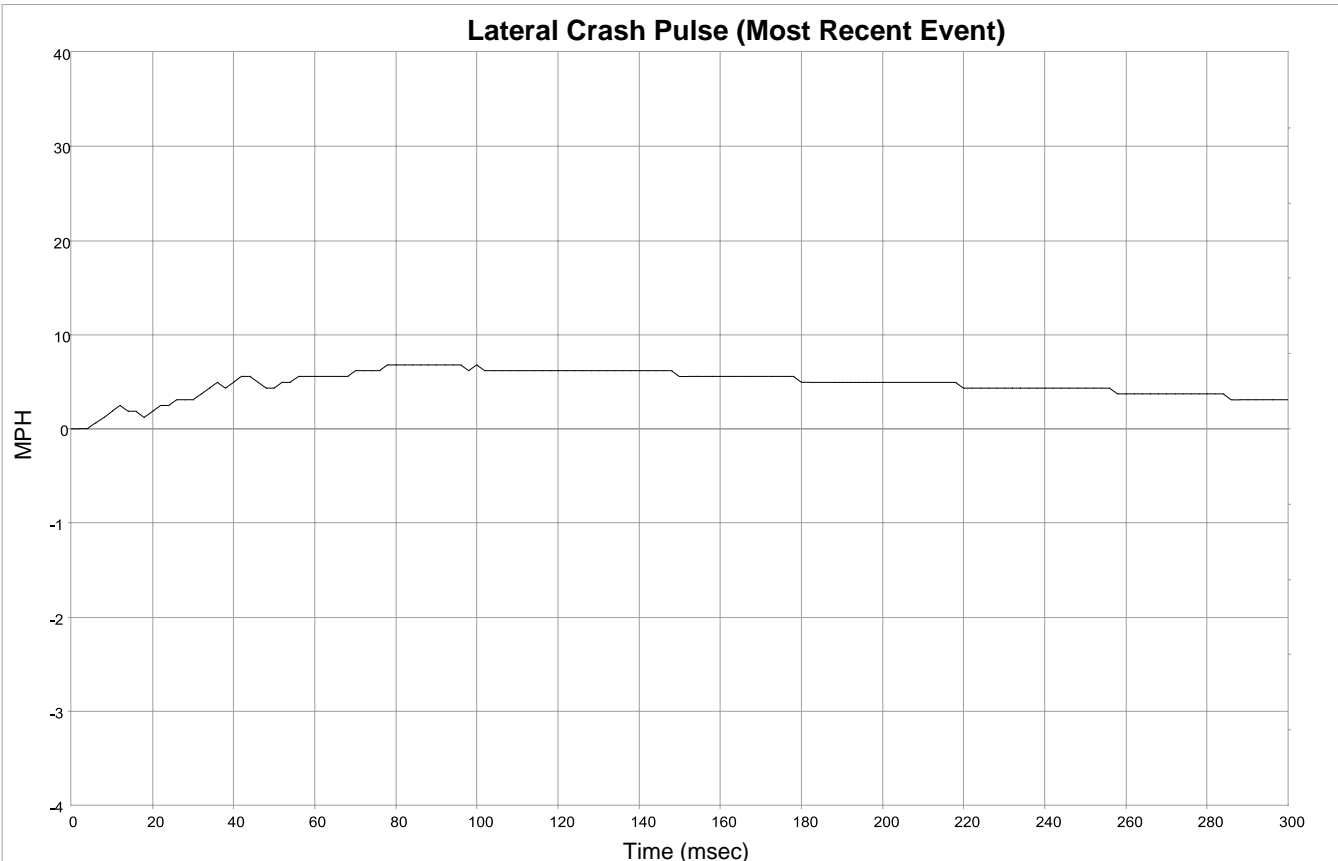
Complete File Recorded (Yes, No)	Yes
Ignition Cycle, Crash	5370
Multi-Event, Number of Events (1,2)	1
Time from Event 1 to 2 (sec)	0.00
Safety Belt Status, Driver	Unbuckled
Safety Belt Status, Outboard Front Passenger	Unbuckled
Frontal Airbag Warning Lamp, On/Off	Off
Seat Track Position Switch, Foremost, Status, Driver	No
Seat Track Position Switch, Foremost, Status, Outboard Front Passenger	No
Occupant Size Classification, Right Front Passenger	Child
Maximum Delta-V Longitudinal (MPH [km/h])	-18.6 [-30]
Time, Maximum Delta-V, Longitudinal (msec)	98
Maximum Delta-V Lateral (MPH [km/h])	6.8 [11]
Time, Maximum Delta-V, Lateral (msec)	78
Time, Operation System Time (min)	68244.6
Time, Airbag Warning Lamp On (min)	0
Number, Event	1
Number, Total Events	1
System Voltage at Event, Bussed (V)	13.9
Supply Voltage at Event, ACM (V)	14.3
Operation Via Energy Reserved	No
Odometer at Event (km)	60714
VIN at Event (last 8 digits)	FN*****

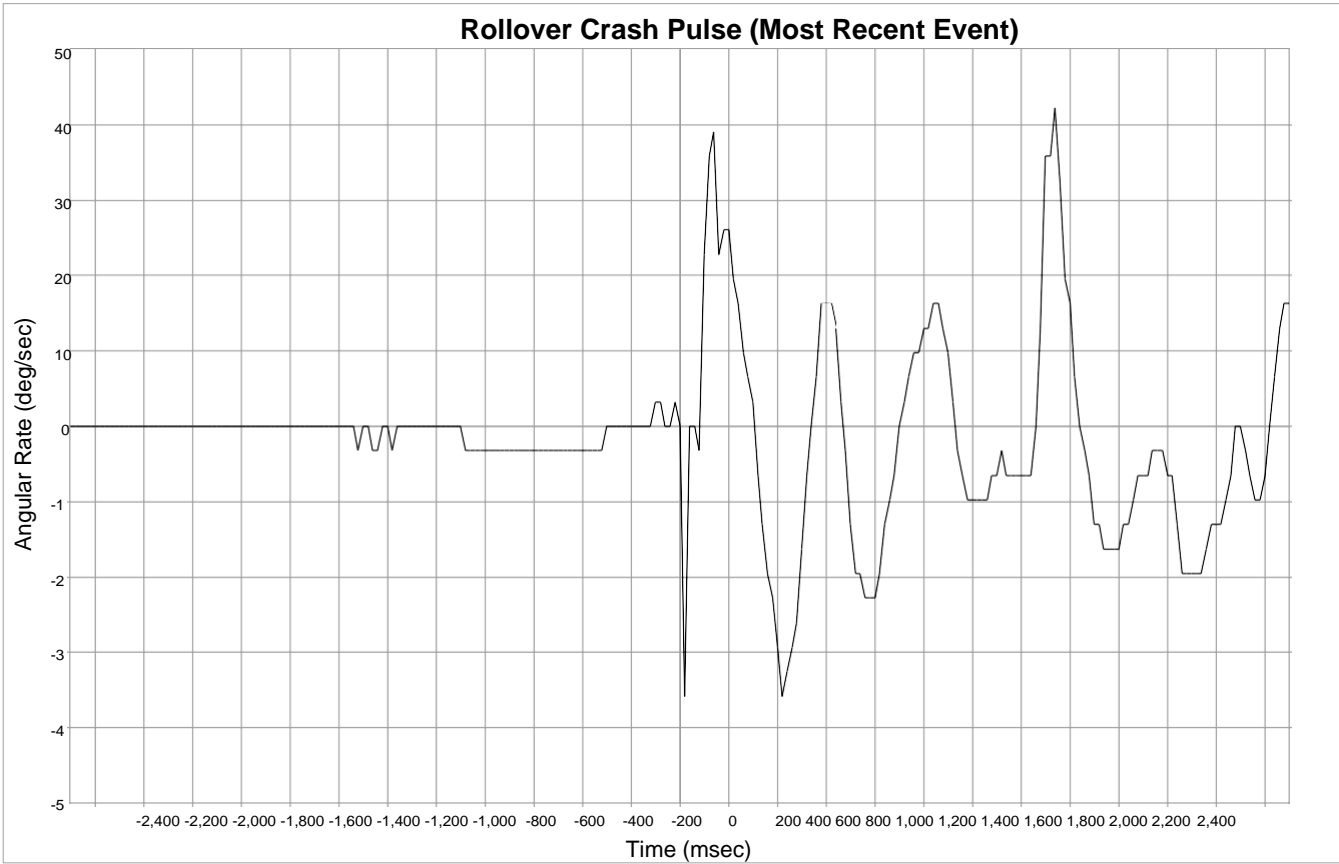
### Deployment Command Data (Most Recent Event)

Frontal Airbag Deployment, 1st Stage, Driver	Yes
Frontal Airbag Deployment, 2nd Stage, Driver	Yes
Frontal Airbag Deployment, 3rd Squib, Driver	Yes
Frontal Airbag Deployment, Time to First Stage Deployment, Driver (msec)	22
Frontal Airbag Deployment, Time to 2nd Stage Deployment, Driver (msec)	25
Frontal Airbag Deployment, Time to 3rd Squib Deployment, Driver (msec)	172
Knee Airbag Deployment, Driver	Yes
Retractor Pretensioner, Driver	Yes
Anchor Pretensioner, Driver	Yes
Seatbelt Load Limiter, Driver	Yes
Frontal Airbag Deployment, 1st Stage, Passenger	Yes
Frontal Airbag Deployment, 2nd Stage, Passenger	Yes
Frontal Airbag Deployment, 3rd Squib, Passenger	Yes
Frontal Airbag Deployment, Time to First Stage Deployment, Passenger (msec)	22
Frontal Airbag Deployment, Time to 2nd Stage Deployment, Passenger (msec)	172
Frontal Airbag Deployment, Time to 3rd Squib Deployment, Passenger (msec)	42
Knee Airbag Deployment, Passenger	Yes
Retractor Pretensioner, Passenger	Yes
Anchor Pretensioner, Passenger	Yes
Seatbelt Load Limiter, Passenger	Yes
Side Seat Airbags Deployment, Left	Yes
Side Curtain Airbag Deployment, Left	Yes
Side Seat Airbags Deployment, Right	No
Side Curtain Airbag Deployment, Right	No

**DTCs Present at Start of Event (Most Recent Event)**

No DTCs Present





### 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	-1.2 [-2]
10	-1.9 [-3]
12	-3.1 [-5]
14	-3.1 [-5]
16	-3.1 [-5]
18	-1.9 [-3]
20	-4.3 [-7]
22	-6.8 [-11]
24	-6.8 [-11]
26	-6.2 [-10]
28	-6.8 [-11]
30	-7.5 [-12]
32	-9.3 [-15]
34	-10.6 [-17]
36	-11.2 [-18]
38	-10.6 [-17]
40	-10.6 [-17]
42	-12.4 [-20]
44	-13.0 [-21]
46	-13.7 [-22]
48	-13.7 [-22]
50	-13.7 [-22]
52	-14.9 [-24]
54	-15.5 [-25]
56	-15.5 [-25]
58	-16.2 [-26]
60	-16.2 [-26]
62	-16.2 [-26]
64	-16.2 [-26]
66	-16.8 [-27]
68	-16.8 [-27]
70	-17.4 [-28]
72	-17.4 [-28]
74	-17.4 [-28]
76	-18.0 [-29]
78	-18.0 [-29]
80	-18.0 [-29]
82	-18.0 [-29]
84	-18.0 [-29]
86	-18.0 [-29]
88	-18.0 [-29]
90	-18.0 [-29]
92	-18.0 [-29]
94	-18.0 [-29]
96	-18.0 [-29]
98	-18.6 [-30]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
100	-18.6 [-30]
102	-18.6 [-30]
104	-18.6 [-30]
106	-18.6 [-30]
108	-18.6 [-30]
110	-18.6 [-30]
112	-18.6 [-30]
114	-18.6 [-30]
116	-18.6 [-30]
118	-18.6 [-30]
120	-18.6 [-30]
122	-18.6 [-30]
124	-18.6 [-30]
126	-18.6 [-30]
128	-18.6 [-30]
130	-18.6 [-30]
132	-18.6 [-30]
134	-18.6 [-30]
136	-18.6 [-30]
138	-18.6 [-30]
140	-18.6 [-30]
142	-18.6 [-30]
144	-18.6 [-30]
146	-18.6 [-30]
148	-18.6 [-30]
150	-18.6 [-30]
152	-18.6 [-30]
154	-18.6 [-30]
156	-18.6 [-30]
158	-18.6 [-30]
160	-18.6 [-30]
162	-18.6 [-30]
164	-18.6 [-30]
166	-18.6 [-30]
168	-18.6 [-30]
170	-18.6 [-30]
172	-18.6 [-30]
174	-18.6 [-30]
176	-18.6 [-30]
178	-18.6 [-30]
180	-18.6 [-30]
182	-18.6 [-30]
184	-18.6 [-30]
186	-18.6 [-30]
188	-18.6 [-30]
190	-18.6 [-30]
192	-18.6 [-30]
194	-18.6 [-30]
196	-18.6 [-30]
198	-18.6 [-30]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
200	-18.6 [-30]
202	-18.6 [-30]
204	-18.6 [-30]
206	-18.6 [-30]
208	-18.6 [-30]
210	-18.6 [-30]
212	-18.0 [-29]
214	-18.0 [-29]
216	-18.0 [-29]
218	-18.0 [-29]
220	-18.0 [-29]
222	-18.0 [-29]
224	-18.0 [-29]
226	-18.0 [-29]
228	-18.0 [-29]
230	-18.0 [-29]
232	-18.0 [-29]
234	-18.0 [-29]
236	-18.0 [-29]
238	-18.0 [-29]
240	-18.0 [-29]
242	-18.0 [-29]
244	-18.0 [-29]
246	-18.0 [-29]
248	-18.0 [-29]
250	-18.0 [-29]
252	-18.0 [-29]
254	-18.0 [-29]
256	-18.0 [-29]
258	-18.0 [-29]
260	-18.0 [-29]
262	-18.0 [-29]
264	-18.0 [-29]
266	-18.0 [-29]
268	-18.0 [-29]
270	-18.0 [-29]
272	-18.0 [-29]
274	-18.0 [-29]
276	-18.0 [-29]
278	-18.0 [-29]
280	-18.0 [-29]
282	-18.0 [-29]
284	-18.0 [-29]
286	-18.0 [-29]
288	-18.0 [-29]
290	-18.0 [-29]
292	-18.0 [-29]
294	-18.0 [-29]
296	-18.0 [-29]
298	-18.0 [-29]
300	-18.0 [-29]

### 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	0.6 [1]
8	1.2 [2]
10	1.9 [3]
12	2.5 [4]
14	1.9 [3]
16	1.9 [3]
18	1.2 [2]
20	1.9 [3]
22	2.5 [4]
24	2.5 [4]
26	3.1 [5]
28	3.1 [5]
30	3.1 [5]
32	3.7 [6]
34	4.3 [7]
36	5.0 [8]
38	4.3 [7]
40	5.0 [8]
42	5.6 [9]
44	5.6 [9]
46	5.0 [8]
48	4.3 [7]
50	4.3 [7]
52	5.0 [8]
54	5.0 [8]
56	5.6 [9]
58	5.6 [9]
60	5.6 [9]
62	5.6 [9]
64	5.6 [9]
66	5.6 [9]
68	5.6 [9]
70	6.2 [10]
72	6.2 [10]
74	6.2 [10]
76	6.2 [10]
78	6.8 [11]
80	6.8 [11]
82	6.8 [11]
84	6.8 [11]
86	6.8 [11]
88	6.8 [11]
90	6.8 [11]
92	6.8 [11]
94	6.8 [11]
96	6.8 [11]
98	6.2 [10]

Time (msec)	Delta-V, Lateral (MPH [km/h])
100	6.8 [11]
102	6.2 [10]
104	6.2 [10]
106	6.2 [10]
108	6.2 [10]
110	6.2 [10]
112	6.2 [10]
114	6.2 [10]
116	6.2 [10]
118	6.2 [10]
120	6.2 [10]
122	6.2 [10]
124	6.2 [10]
126	6.2 [10]
128	6.2 [10]
130	6.2 [10]
132	6.2 [10]
134	6.2 [10]
136	6.2 [10]
138	6.2 [10]
140	6.2 [10]
142	6.2 [10]
144	6.2 [10]
146	6.2 [10]
148	6.2 [10]
150	5.6 [9]
152	5.6 [9]
154	5.6 [9]
156	5.6 [9]
158	5.6 [9]
160	5.6 [9]
162	5.6 [9]
164	5.6 [9]
166	5.6 [9]
168	5.6 [9]
170	5.6 [9]
172	5.6 [9]
174	5.6 [9]
176	5.6 [9]
178	5.6 [9]
180	5.0 [8]
182	5.0 [8]
184	5.0 [8]
186	5.0 [8]
188	5.0 [8]
190	5.0 [8]
192	5.0 [8]
194	5.0 [8]
196	5.0 [8]
198	5.0 [8]

Time (msec)	Delta-V, Lateral (MPH [km/h])
200	5.0 [8]
202	5.0 [8]
204	5.0 [8]
206	5.0 [8]
208	5.0 [8]
210	5.0 [8]
212	5.0 [8]
214	5.0 [8]
216	5.0 [8]
218	5.0 [8]
220	4.3 [7]
222	4.3 [7]
224	4.3 [7]
226	4.3 [7]
228	4.3 [7]
230	4.3 [7]
232	4.3 [7]
234	4.3 [7]
236	4.3 [7]
238	4.3 [7]
240	4.3 [7]
242	4.3 [7]
244	4.3 [7]
246	4.3 [7]
248	4.3 [7]
250	4.3 [7]
252	4.3 [7]
254	4.3 [7]
256	4.3 [7]
258	3.7 [6]
260	3.7 [6]
262	3.7 [6]
264	3.7 [6]
266	3.7 [6]
268	3.7 [6]
270	3.7 [6]
272	3.7 [6]
274	3.7 [6]
276	3.7 [6]
278	3.7 [6]
280	3.7 [6]
282	3.7 [6]
284	3.7 [6]
286	3.1 [5]
288	3.1 [5]
290	3.1 [5]
292	3.1 [5]
294	3.1 [5]
296	3.1 [5]
298	3.1 [5]
300	3.1 [5]

### Rollover Crash Pulse (Most Recent Event) (if equipped)

Time (msec)	Angular Rate (deg/sec)
-2500	0.00
-2480	0.00
-2460	0.00
-2440	0.00
-2420	0.00
-2400	0.00
-2380	0.00
-2360	0.00
-2340	0.00
-2320	0.00
-2300	0.00
-2280	0.00
-2260	0.00
-2240	0.00
-2220	0.00
-2200	0.00
-2180	0.00
-2160	0.00
-2140	0.00
-2120	0.00
-2100	0.00
-2080	0.00
-2060	0.00
-2040	0.00
-2020	0.00
-2000	0.00
-1980	0.00
-1960	0.00
-1940	0.00
-1920	0.00
-1900	0.00
-1880	0.00
-1860	0.00
-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	0.00
-1600	0.00
-1580	0.00
-1560	0.00
-1540	0.00
-1520	0.00

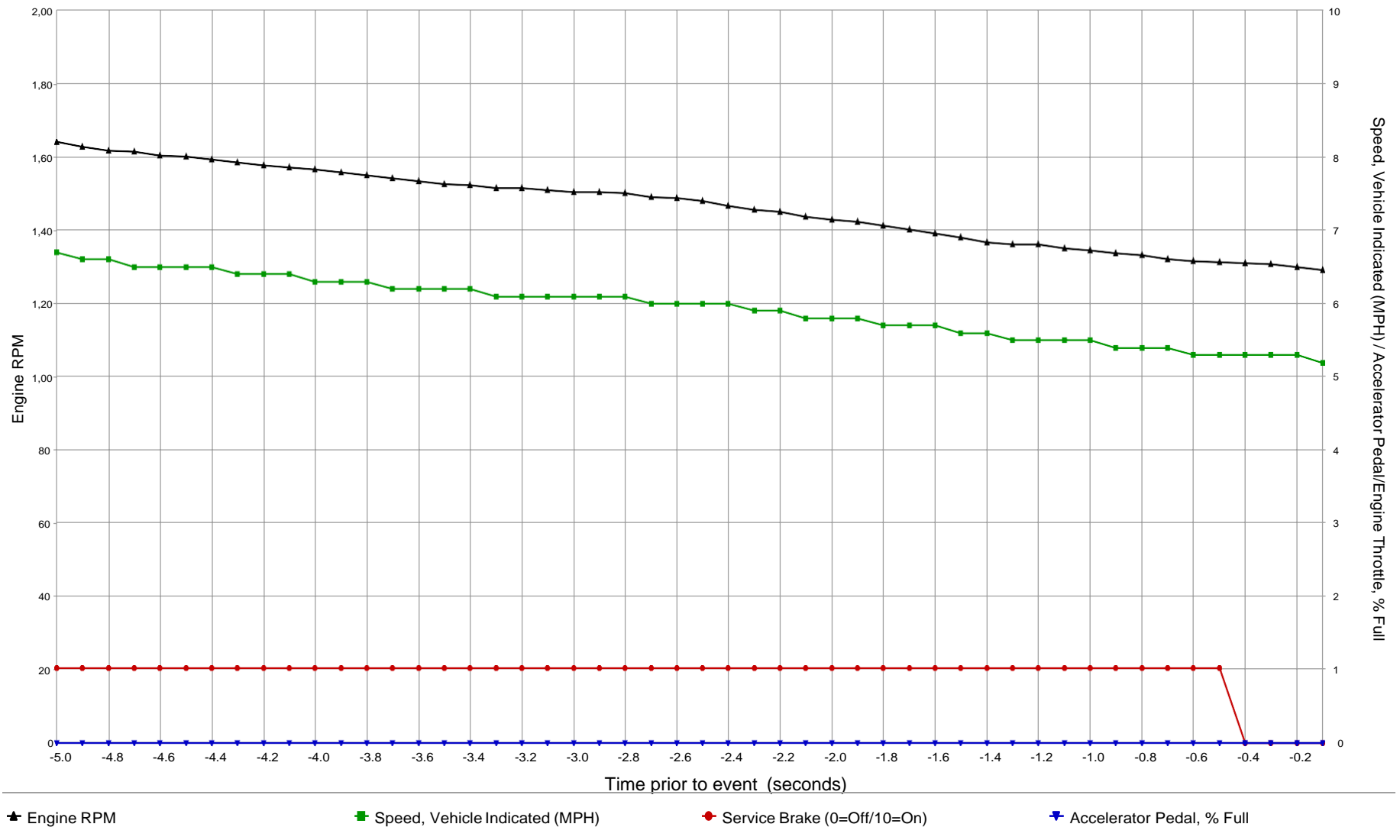
Time (msec)	Angular Rate (deg/sec)
-1500	0.00
-1480	0.00
-1460	0.00
-1440	0.00
-1420	0.00
-1400	0.00
-1380	0.00
-1360	0.00
-1340	0.00
-1320	-3.26
-1300	0.00
-1280	0.00
-1260	-3.26
-1240	-3.26
-1220	0.00
-1200	0.00
-1180	-3.26
-1160	0.00
-1140	0.00
-1120	0.00
-1100	0.00
-1080	0.00
-1060	0.00
-1040	0.00
-1020	0.00
-1000	0.00
-980	0.00
-960	0.00
-940	0.00
-920	0.00
-900	0.00
-880	-3.26
-860	-3.26
-840	-3.26
-820	-3.26
-800	-3.26
-780	-3.26
-760	-3.26
-740	-3.26
-720	-3.26
-700	-3.26
-680	-3.26
-660	-3.26
-640	-3.26
-620	-3.26
-600	-3.26
-580	-3.26
-560	-3.26
-540	-3.26
-520	-3.26

Time (msec)	Angular Rate (deg/sec)
-500	-3.26
-480	-3.26
-460	-3.26
-440	-3.26
-420	-3.26
-400	-3.26
-380	-3.26
-360	-3.26
-340	-3.26
-320	-3.26
-300	0.00
-280	0.00
-260	0.00
-240	0.00
-220	0.00
-200	0.00
-180	0.00
-160	0.00
-140	0.00
-120	0.00
-100	3.26
-80	3.26
-60	0.00
-40	0.00
-20	3.26
0	0.00
20	-35.81
40	0.00
60	0.00
80	-3.26
100	22.79
120	35.81
140	39.06
160	22.79
180	26.04
200	26.04
220	19.53
240	16.28
260	9.77
280	6.51
300	3.26
320	-6.51
340	-13.02
360	-19.53
380	-22.79
400	-29.30
420	-35.81
440	-32.55
460	-29.30
480	-26.04

### Rollover Crash Pulse (Most Recent Event) (if equipped)

Time (msec)	Angular Rate (deg/sec)	Time (msec)	Angular Rate (deg/sec)
500	-16.28	1500	35.81
520	-6.51	1520	35.81
540	0.00	1540	42.32
560	6.51	1560	32.55
580	16.28	1580	19.53
600	16.28	1600	16.28
620	16.28	1620	6.51
640	13.02	1640	0.00
660	3.26	1660	-3.26
680	-3.26	1680	-6.51
700	-13.02	1700	-13.02
720	-19.53	1720	-13.02
740	-19.53	1740	-16.28
760	-22.79	1760	-16.28
780	-22.79	1780	-16.28
800	-22.79	1800	-16.28
820	-19.53	1820	-13.02
840	-13.02	1840	-13.02
860	-9.77	1860	-9.77
880	-6.51	1880	-6.51
900	0.00	1900	-6.51
920	3.26	1920	-6.51
940	6.51	1940	-3.26
960	9.77	1960	-3.26
980	9.77	1980	-3.26
1000	13.02	2000	-6.51
1020	13.02	2020	-6.51
1040	16.28	2040	-13.02
1060	16.28	2060	-19.53
1080	13.02	2080	-19.53
1100	9.77	2100	-19.53
1120	3.26	2120	-19.53
1140	-3.26	2140	-19.53
1160	-6.51	2160	-16.28
1180	-9.77	2180	-13.02
1200	-9.77	2200	-13.02
1220	-9.77	2220	-13.02
1240	-9.77	2240	-9.77
1260	-9.77	2260	-6.51
1280	-6.51	2280	0.00
1300	-6.51	2300	0.00
1320	-3.26	2320	-3.26
1340	-6.51	2340	-6.51
1360	-6.51	2360	-9.77
1380	-6.51	2380	-9.77
1400	-6.51	2400	-6.51
1420	-6.51	2420	0.00
1440	-6.51	2440	6.51
1460	0.00	2460	13.02
1480	13.02	2480	16.28
		2500	16.28

**Pre-Crash Data (Most Recent Event)**



SNA values will not be plotted on the graph

### Pre-Crash Data [10 samples/sec] (Most Recent Event - table 1 of 2)

(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	Service Brake	Engine RPM	ABS Activity	Stability Control	Steering Input (deg)
-5.0	Complete	67 [107]	0.00	On	1,641	No	On	1
-4.9	Complete	66 [106]	0.00	On	1,627	No	On	1
-4.8	Complete	66 [106]	0.00	On	1,615	No	On	1
-4.7	Complete	65 [105]	0.00	On	1,614	No	On	1
-4.6	Complete	65 [105]	0.00	On	1,604	No	On	2
-4.5	Complete	65 [104]	0.00	On	1,599	No	On	2
-4.4	Complete	65 [104]	0.00	On	1,591	No	On	3
-4.3	Complete	64 [103]	0.00	On	1,584	No	On	3
-4.2	Complete	64 [103]	0.00	On	1,577	No	On	4
-4.1	Complete	64 [102]	0.00	On	1,571	No	On	3
-4.0	Complete	63 [102]	0.00	On	1,566	No	On	4
-3.9	Complete	63 [102]	0.00	On	1,558	No	On	4
-3.8	Complete	63 [101]	0.00	On	1,549	No	On	2
-3.7	Complete	62 [101]	0.00	On	1,541	No	On	0
-3.6	Complete	62 [100]	0.00	On	1,532	No	On	0
-3.5	Complete	62 [100]	0.00	On	1,524	No	On	0
-3.4	Complete	62 [99]	0.00	On	1,521	No	On	1
-3.3	Complete	61 [99]	0.00	On	1,513	No	On	2
-3.2	Complete	61 [98]	0.00	On	1,514	No	On	4
-3.1	Complete	61 [98]	0.00	On	1,508	No	On	4
-3.0	Complete	61 [98]	0.00	On	1,504	No	On	4
-2.9	Complete	61 [98]	0.00	On	1,503	No	On	5
-2.8	Complete	61 [98]	0.00	On	1,500	No	On	6
-2.7	Complete	60 [97]	0.00	On	1,489	No	On	7
-2.6	Complete	60 [97]	0.00	On	1,487	No	On	7
-2.5	Complete	60 [96]	0.00	On	1,478	No	On	7
-2.4	Complete	60 [96]	0.00	On	1,467	No	On	7
-2.3	Complete	59 [95]	0.00	On	1,455	No	On	7
-2.2	Complete	59 [95]	0.00	On	1,451	No	On	7
-2.1	Complete	58 [94]	0.00	On	1,437	No	On	8
-2.0	Complete	58 [94]	0.00	On	1,429	No	On	9
-1.9	Complete	58 [93]	0.00	On	1,424	No	On	10
-1.8	Complete	57 [92]	0.00	On	1,412	No	On	10
-1.7	Complete	57 [92]	0.00	On	1,401	No	On	11
-1.6	Complete	57 [91]	0.00	On	1,391	No	On	11
-1.5	Complete	56 [90]	0.00	On	1,381	No	On	11
-1.4	Complete	56 [90]	0.00	On	1,367	No	On	11
-1.3	Complete	55 [89]	0.00	On	1,361	No	On	11
-1.2	Complete	55 [89]	0.00	On	1,361	No	On	9
-1.1	Complete	55 [88]	0.00	On	1,349	No	On	10
-1.0	Complete	55 [88]	0.00	On	1,344	No	On	9
-0.9	Complete	54 [87]	0.00	On	1,338	No	On	7
-0.8	Complete	54 [87]	0.00	On	1,331	No	On	6
-0.7	Complete	54 [86]	0.00	On	1,320	No	On	6
-0.6	Complete	53 [86]	0.00	On	1,316	No	On	6
-0.5	Complete	53 [86]	0.00	On	1,314	No	On	6
-0.4	Complete	53 [85]	0.00	Off	1,311	No	On	7
-0.3	Complete	53 [85]	0.00	Off	1,307	No	On	8
-0.2	Complete	53 [85]	0.00	Off	1,298	No	On	11
-0.1	Complete	52 [84]	0.00	Off	1,292	No	On	13

**Pre-Crash Data [10 samples/sec] (Most Recent Event - table 2 of 2)**  
 (the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	ABS MIL	Yaw Rate (deg/sec)	Wheel Speed LF (km/h)	Wheel Speed RF (km/h)	Wheel Speed LR (km/h)	Wheel Speed RR (km/h)
-5.0	Off	-0.72	106.57	107.03	106.02	106.31
-4.9	Off	-0.72	105.77	106.08	105.13	105.51
-4.8	Off	-0.96	105.10	105.53	104.56	104.76
-4.7	Off	-0.64	104.73	105.10	103.98	104.24
-4.6	Off	-0.40	104.41	104.70	103.66	103.84
-4.5	Off	0.00	103.87	104.41	103.06	103.49
-4.4	Off	0.00	103.30	103.66	102.89	103.21
-4.3	Off	0.00	102.80	103.35	102.48	102.72
-4.2	Off	0.00	102.48	102.92	101.83	102.26
-4.1	Off	0.00	102.09	102.48	101.40	101.74
-4.0	Off	0.24	101.63	102.14	101.02	101.34
-3.9	Off	0.24	101.11	101.48	100.48	100.91
-3.8	Off	0.24	100.63	101.14	100.08	100.42
-3.7	Off	-0.48	100.10	100.56	99.53	99.90
-3.6	Off	-1.20	99.70	99.93	99.04	99.33
-3.5	Off	-1.20	99.24	99.59	98.66	98.78
-3.4	Off	-0.72	98.76	99.10	98.13	98.32
-3.3	Off	-0.48	98.44	98.70	97.92	98.09
-3.2	Off	0.00	98.20	98.64	97.72	97.89
-3.1	Off	0.32	97.92	98.32	97.38	97.75
-3.0	Off	0.40	97.72	98.06	97.20	97.55
-2.9	Off	0.32	97.46	98.01	97.00	97.29
-2.8	Off	0.72	97.29	97.75	96.72	97.09
-2.7	Off	0.96	96.83	97.20	96.20	96.68
-2.6	Off	1.20	96.40	96.97	95.85	96.26
-2.5	Off	1.12	95.91	96.40	95.30	95.73
-2.4	Off	0.80	95.37	95.73	94.70	95.25
-2.3	Off	0.96	94.73	95.25	94.19	94.62
-2.2	Off	1.20	94.02	94.62	93.61	94.02
-2.1	Off	1.20	93.52	93.90	92.95	93.38
-2.0	Off	1.20	92.89	93.38	92.23	92.80
-1.9	Off	1.52	92.29	92.92	91.69	92.20
-1.8	Off	1.52	91.63	92.23	91.11	91.57
-1.7	Off	1.52	90.94	91.45	90.45	90.97
-1.6	Off	1.84	90.30	90.85	89.76	90.34
-1.5	Off	2.08	89.67	90.34	89.01	89.70
-1.4	Off	2.24	88.73	89.53	88.61	89.10
-1.3	Off	2.48	88.44	89.07	88.55	88.90
-1.2	Off	1.52	88.23	88.76	87.29	87.80
-1.1	Off	1.20	87.77	88.30	87.38	87.77
-1.0	Off	1.44	87.20	87.80	86.95	87.41
-0.9	Off	1.04	86.63	87.23	86.45	86.83
-0.8	Off	0.64	86.25	86.63	85.97	86.23
-0.7	Off	0.48	85.97	86.23	85.51	85.73
-0.6	Off	0.56	85.59	86.00	85.22	85.45
-0.5	Off	0.96	85.34	85.80	84.82	85.16
-0.4	Off	1.12	84.99	85.54	84.48	84.99
-0.3	Off	1.60	84.70	85.16	84.33	84.67
-0.2	Off	2.40	84.33	84.84	83.95	84.38
-0.1	Off	2.88	83.98	84.50	83.67	84.10

### Pre-Crash Data [4 samples/sec] (Most Recent Event - table 1 of 2)

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

Time Stamp (sec)	Pre-Crash Recorder Status	Raw Manifold Pressure (kPa)	PCM MIL	ETC Lamp	Current Gear	Reverse Gear Status
-5.00	Complete	26.40	Off	Off	D8	Not_Reverse
-4.75	Complete	26.40	Off	Off	D8	Not_Reverse
-4.50	Complete	26.40	Off	Off	D8	Not_Reverse
-4.25	Complete	26.40	Off	Off	D8	Not_Reverse
-4.00	Complete	26.40	Off	Off	D8	Not_Reverse
-3.75	Complete	26.40	Off	Off	D8	Not_Reverse
-3.50	Complete	26.40	Off	Off	D8	Not_Reverse
-3.25	Complete	27.20	Off	Off	D8	Not_Reverse
-3.00	Complete	27.20	Off	Off	D8	Not_Reverse
-2.75	Complete	27.20	Off	Off	D8	Not_Reverse
-2.50	Complete	27.20	Off	Off	D8	Not_Reverse
-2.25	Complete	28.00	Off	Off	D8	Not_Reverse
-2.00	Complete	28.00	Off	Off	D8	Not_Reverse
-1.75	Complete	28.00	Off	Off	D8	Not_Reverse
-1.50	Complete	28.00	Off	Off	D8	Not_Reverse
-1.25	Complete	28.00	Off	Off	D8	Not_Reverse
-1.00	Complete	28.00	Off	Off	D8	Not_Reverse
-0.75	Complete	28.00	Off	Off	D8	Not_Reverse
-0.50	Complete	28.00	Off	Off	D8	Not_Reverse
-0.25	Complete	28.00	Off	Off	D8	Not_Reverse

### Pre-Crash Data [4 samples/sec] (Most Recent Event - table 2 of 2)

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

Time Stamp (sec)	Tire Pressure Position	Tire Pressure Status	Tire Pressure Value (PSI)	Cruise Control Lamp Status	Cruise Control Engaged Status	ACC On/Off	ACC Set Speed (MPH [km/h])
-5.00	RHF	Low	27	Off	Not_Engaged	Off	0 [0.0]
-4.75	RHF	Low	27	Off	Not_Engaged	Off	0 [0.0]
-4.50	LHF	Normal	37	Off	Not_Engaged	Off	0 [0.0]
-4.25	LHF	Normal	37	Off	Not_Engaged	Off	0 [0.0]
-4.00	LHF	Normal	37	Off	Not_Engaged	Off	0 [0.0]
-3.75	LHF	Normal	37	Off	Not_Engaged	Off	0 [0.0]
-3.50	RHR	Normal	35	Off	Not_Engaged	Off	0 [0.0]
-3.25	RHR	Normal	35	Off	Not_Engaged	Off	0 [0.0]
-3.00	RHR	Normal	35	Off	Not_Engaged	Off	0 [0.0]
-2.75	RHR	Normal	35	Off	Not_Engaged	Off	0 [0.0]
-2.50	LHR	Normal	41	Off	Not_Engaged	Off	0 [0.0]
-2.25	LHR	Normal	41	Off	Not_Engaged	Off	0 [0.0]
-2.00	LHR	Normal	41	Off	Not_Engaged	Off	0 [0.0]
-1.75	LHR	Normal	41	Off	Not_Engaged	Off	0 [0.0]
-1.50	RHF	Low	27	Off	Not_Engaged	Off	0 [0.0]
-1.25	RHF	Low	27	Off	Not_Engaged	Off	0 [0.0]
-1.00	RHF	Low	27	Off	Not_Engaged	Off	0 [0.0]
-0.75	RHF	Low	27	Off	Not_Engaged	Off	0 [0.0]
-0.50	LHF	Normal	37	Off	Not_Engaged	Off	0 [0.0]
-0.25	LHF	Normal	37	Off	Not_Engaged	Off	0 [0.0]



71 01 03 01 01 07 CC 05 6B 00 AD 00 00 20 DE 1E 05 33 00 00 1C 60 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 08 CC 05 72 00 AE 00 00 20 DE 1E 05 3A 00 00 1C 6B 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 09 CC 05 7C 00 AF 00 00 20 DE 1E 05 40 00 00 1C 82 00 00 00 00 00 00 00 00 00 00  
00 00

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00 00

71 01 03 01 01 0B CC 05 8D 00 B1 00 00 21 DE 1E 05 51 00 00 1C 82 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 0C CC 05 8F 00 B2 00 00 21 DE 1E 05 51 00 00 1C 93 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 0D CC 05 9C 00 B2 00 00 21 DE 1E 05 57 00 00 1C 97 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 0E CC 05 A5 00 B4 00 00 21 DE 1E 05 65 00 00 1C 97 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 0F CC 05 B0 00 B5 00 00 21 DE 1E 05 6F 00 00 1C 94 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 10 CC 05 B9 00 B7 00 00 21 DE 1E 05 79 00 00 1C 8E 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 11 CC 05 C3 00 B8 00 00 21 DE 1E 05 84 00 00 1C 88 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 12 CC 05 CE 00 B9 00 00 21 DE 1E 05 90 00 00 1C 88 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 13 CC 05 D8 00 BA 00 00 21 DE 1E 05 95 00 00 1C 7D 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 14 CC 05 E0 00 BC 00 00 21 DE 1E 05 9D 00 00 1C 71 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 15 CC 05 E9 00 BD 00 00 21 DE 1E 05 AB 00 00 1C 6D 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 16 CC 05 F5 00 BE 00 00 21 DE 1E 05 AF 00 00 1C 6D 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 17 CC 05 FE 00 BF 00 00 21 DE 1E 05 BB 00 00 1C 6C 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 18 CC 06 05 00 C0 00 00 21 DE 1E 05 C6 00 00 1C 6B 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 19 CC 06 0D 00 C1 00 00 21 DD 1E 05 CF 00 00 1C 6B 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 1A CC 06 14 00 C2 00 00 21 DD 1E 05 D1 00 00 1C 6C 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 1B CC 06 19 00 C3 00 00 21 DD 1E 05 DC 00 00 1C 65 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 1C CC 06 1D 00 C3 00 00 21 DD 1E 05 DF 00 00 1C 57 00 00 00 00 00 00 00 00 00 00  
00 00

71 01 03 01 01 1D CC 06 20 00 C3 00 00 21 DD 1E 05 E0 00 00 1C 51 00 00 00 00 00 00 00 00 00 00  
00 00



71 01 03 01 02 02 FF  
FF FF

71 01 03 01 02 03 FF  
FF FF

71 01 03 01 02 04 FF  
FF FF

71 01 03 01 02 05 FF  
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71 01 03 01 02 08 FF  
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71 01 03 01 02 09 FF  
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71 01 03 01 02 0A FF  
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71 01 03 01 02 0D FF  
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71 01 03 01 02 0F FF  
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71 01 03 01 02 10 FF  
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71 01 03 01 02 11 FF  
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71 01 03 01 02 1A FF  
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71 01 03 01 02 1D FF  
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71 01 03 01 02 20 FF  
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71 01 03 01 02 22 FF  
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71 01 03 01 02 28 FF  
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71 01 03 01 02 29 FF  
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71 01 03 01 02 2A FF  
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71 01 03 01 02 2B FF  
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71 01 03 01 02 2C FF  
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71 01 03 01 02 2D FF  
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71 01 03 01 02 2E FF  
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71 01 03 01 02 2F FF  
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71 01 03 01 02 30 FF

71 01 03 01 02 31 FF

71 01 03 01 03 00 FF

71 01 03 01 03 01 FF

71 01 03 01 03 02 FF

71 01 03 01 03 03 FF

71 01 03 01 03 04 FF

71 01 03 01 03 05 FF

71 01 03 01 03 06 FF

71 01 03 01 03 07 FF

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71 01 03 01 03 0C FF

71 01 03 01 03 0D FF

71 01 03 01 03 0E FF

71 01 03 01 03 0F FF

71 01 03 01 03 10 FF

71 01 03 01 03 11 FF

71 01 03 01 03 12 FF

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71 01 03 01 03 14 FF  
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71 01 03 01 03 1A FF  
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71 01 03 01 03 1D FF  
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71 01 03 01 03 20 FF  
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71 01 03 01 03 22 FF  
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71 01 03 01 03 26 FF  
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71 01 03 01 03 27 FF  
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71 01 03 01 03 28 FF  
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71 01 03 01 03 29 FF  
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71 01 03 01 03 2A FF  
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71 01 03 01 03 2B 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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71 01 03 01 03 2C 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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71 01 03 01 03 2D 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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71 01 03 01 03 2E 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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71 01 03 01 03 2F 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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71 01 03 01 03 30 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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71 01 03 01 03 31 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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71 01 03 05 01 00 CC 00 00 02 03 07 FE 07 FE 04 00 06 5F 07 FF 00 02 29 D6 2A 0D 29 FE 2A 40 00
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00 00 00 00 00

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00 00 00 00 00

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00 00 00 00 00

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00 00 00 00 00

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00 00 00 00 00

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01 04 D8 07 FF 01 F4 01 BB 08 1C 07 EF 08 07 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00

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01 04 E7 07 FF 01 F4 01 BB 08 0C 07 EF 08 06 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00

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01 04 DF 07 FF 01 F4 01 BB 08 2D 07 D2 08 08 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00

71 01 03 05 01 08 CC 00 00 02 03 07 FE 07 FE 04 00 06 5C 07 FF 00 13 2B 3A 2B 6A 2B 50 2B 9E 00
01 04 D8 07 FF 01 F4 01 BB 08 1C 07 D4 08 0D 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00

71 01 03 05 01 09 CC 00 00 01 F9 07 FE 07 FE 04 00 06 5C 07 FF 00 13 2B 79 2B B4 2B 9A 2B E7 00
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00 00 00 00 00

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00 00 00 00 00

71 01 03 05 01 0B CC 00 00 01 F5 07 FE 07 FE 04 00 06 5D 07 FF 00 13 2B A5 2B E7 2C 1E 2C 61 00
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00 00 00 00 00

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00 00 00 00 00

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01 05 5A 07 FF 01 F4 01 BC 08 33 07 EC 08 1C 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 0E CC 00 00 01 F7 07 FE 07 FE 04 00 06 5A 07 FF 00 2C 2C 81 2C DA 2C D6 2D 2B 00  
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00 00 00 00 00

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00 00 00 00 00

71 01 03 05 01 10 CC 00 00 02 03 07 FE 07 FE 04 00 06 5B 07 FF 00 2D 2D 3A 2D 7C 2D 78 2D BA 00  
01 05 6E 07 FF 01 F4 01 BC 08 35 07 B3 08 13 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

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01 05 65 07 FF 01 F4 01 BC 08 3B 07 B5 08 13 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 12 CC 00 00 01 FF 07 FE 07 FE 04 00 06 5B 07 FF 00 2C 2D D8 2E 1A 2E 25 2E 76 00  
01 05 5F 07 FF 01 F4 01 BC 08 3C 07 C4 08 13 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 13 CC 00 00 01 F5 07 FE 07 FE 04 00 06 5B 07 FF 00 2E 2E 1D 2E 67 2E 72 2E B1 00  
01 05 5D 07 FF 01 F4 01 BC 08 36 07 B9 08 0F 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 14 CC 00 00 01 FB 07 FE 07 FE 04 00 06 5B 07 FF 00 2C 2E 7A 2E B1 2E C3 2E F3 00  
01 05 3D 07 FF 01 F4 01 BC 08 2A 07 B5 08 0F 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 15 CC 00 00 02 01 07 FE 07 FE 04 00 06 5B 07 FF 00 2B 2E CE 2F 02 2F 02 2F 4F 00  
01 05 0D 07 FF 01 F4 01 BC 08 29 07 BA 08 0F 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 16 CC 00 00 01 F7 07 FE 07 FE 04 00 06 5C 07 FF 00 2C 2F 18 2F 4F 2F 5E 2F A0 00  
01 05 1E 07 FF 01 F4 01 BC 08 33 07 C0 08 0C 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 17 CC 00 00 01 FD 07 FE 07 FE 04 00 06 5C 07 FF 00 2B 2F 5A 2F A0 2F AF 2F DE 00  
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00 00 00 00 00

71 01 03 05 01 18 CC 00 00 02 03 07 FE 07 FE 04 00 06 5D 07 FF 00 28 2F A7 2F DE 2F F4 30 33 00  
01 05 0B 07 FF 01 F4 01 BC 08 2E 07 BB 08 0E 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 19 CC 00 00 01 F9 07 FE 07 FE 04 00 06 5D 07 FF 00 23 2F ED 30 21 30 33 30 7C 00  
01 05 12 07 FF 01 F4 01 BD 08 30 07 D3 08 0F 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

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01 05 12 07 FF 01 F4 01 BC 08 32 07 D4 08 0C 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

71 01 03 05 01 1B CC 00 00 01 F5 07 FE 07 FE 04 00 06 5B 07 FF 00 0C 30 5C 30 8B 30 A5 30 E0 00  
01 05 34 07 FF 01 F4 01 BC 08 31 07 E9 08 09 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

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01 05 16 07 FF 01 F4 01 BC 08 1B 07 F4 08 04 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

00 00 00 00 00

71 01 03 05 01 1D CC 00 00 02 01 07 FE 07 FE 04 00 06 5B 07 FF 00 01 30 9A 30 C6 30 DC 31 08 00  
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00 00 00 00 00

71 01 03 05 01 1E CC 00 00 01 F7 07 FE 07 FE 04 00 06 5C 07 FF 00 01 30 B0 30 E0 30 F6 31 29 00  
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00 00 00 00 00

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00 00 00 00 00

71 01 03 05 01 21 CC 00 00 01 F9 07 FE 07 FE 04 00 06 5B 07 FF 00 17 31 10 31 29 31 61 31 8D 00  
01 04 3A 07 FF 01 F4 01 BC 08 05 07 D0 07 F7 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

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00 00 00 00 00

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00 00 00 00 00

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01 03 4C 07 FF 01 F4 01 BD 08 0D 07 C1 07 FA 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

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01 03 D0 07 FF 01 F4 01 BC 08 1B 07 C8 08 03 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00

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01 04 9A 07 FF 01 F4 01 BD 08 1D 07 D5 08 00 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00  
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00 00 00 00 00

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00 00 00 00 00

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00 00 00 00 00

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00 00 00 00 00

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01 04 16 07 FF 01 F4 01 BD 08 02 07 CF 07 F8 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00

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01 03 BF 07 FF 01 F4 01 BD 08 06 07 BA 07 F4 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00

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01 03 9B 07 FF 01 F4 01 BD 07 FE 07 9A 07 F7 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00

71 01 03 05 01 31 CC 00 00 01 F9 07 FE 07 FE 04 00 06 5E 07 FF 00 3D 35 03 35 28 35 49 35 84 00
01 03 86 07 FF 01 F4 01 BD 08 0F 07 98 07 F7 33 19 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
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71 01 03 05 02 00 FF
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71 01 03 05 02 01 FF
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71 01 03 05 02 02 FF
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71 01 03 05 02 03 FF
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71 01 03 05 02 04 FF
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71 01 03 05 02 05 FF
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71 01 03 05 02 06 FF
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71 01 03 05 02 07 FF
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71 01 03 05 02 08 FF
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71 01 03 05 02 09 FF
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71 01 03 05 02 0A FF
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71 01 03 05 02 0B FF
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71 01 03 05 02 0C FF
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00 0A 2C 0E 0F 00 00
71 01 03 06 01 0F CC 00 14 FA 04 2B 05 69 00 84 FF 00 00 00 02 00 00 04 00 30 00 30 00 10 00 07
D0 FF 80 00 BA 21 F8 00 04 6E 6F 80 80 58 04 00 00 00 04 40 00 00 04 5C 01 9D 01 E5 00 ED 2A 02
00 09 25 0D 07 00 00
71 01 03 06 01 10 CC 00 14 FA 04 30 05 69 00 84 FF 00 00 00 02 00 00 04 00 30 00 30 00 10 00 07
D0 FF 80 00 BA 21 F8 00 04 6F 6F 80 80 58 04 00 00 00 04 40 00 00 04 5C 01 9C 01 E9 00 ED 2A 02
00 07 97 0B 77 00 00
71 01 03 06 01 11 CC 00 14 FA 04 0A 05 69 00 84 FF 00 00 00 02 00 00 04 00 30 00 30 00 10 00 07
D5 FF 80 00 BA 21 F8 00 04 6E 6E 80 80 58 04 00 00 00 04 40 00 00 04 5C 01 9B 01 E8 00 ED 2A 02
00 06 8A 0A 6A 00 00
71 01 03 06 01 12 CC 00 14 FA 03 F1 05 6A 00 84 FF 00 00 00 02 00 00 04 00 30 00 30 00 10 00 07
CE FF 80 00 BA 21 F8 00 04 6F 6F 80 80 58 04 00 00 00 04 40 00 00 44 43 00 9B 01 E5 00 ED 2A 02
00 04 F3 08 D2 00 00
71 01 03 06 01 13 CC 00 14 FA 04 25 05 69 00 84 FF 00 00 00 02 00 00 04 00 30 00 30 00 10 00 07
D0 FF 80 00 BA 21 F8 00 04 6F 6F 80 80 58 04 00 00 00 04 40 00 00 44 43 00 9A 01 E8 00 ED 2A 02
00 03 E0 07 BE 00 00
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June 2018



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

