

CRASH DATA RESEARCH CENTER

Calspan Corporation

Buffalo, NY 14225

ON-SITE ADULT AIR BAG RELATED SERIOUS INJURY INVESTIGATION

CALSPAN CASE NO: CA04-050

VEHICLE – 1996 CHEVROLET CAVALIER

LOCATION – OHIO

CRASH DATE – NOVEMBER, 2004

Contract No. DTNH22-01-C-17002

Prepared for:

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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 are coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

TECHNICAL REPORT STANDARD TITLE PAGE

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<p>16. <i>Abstract</i> This investigation focused on the crash severity and injury mechanisms that resulted in a spinal cord injury at C5 of the 62 year old female driver in a 1996 Chevrolet Cavalier. The Cavalier was equipped with frontal air bags for the driver and front right passenger that deployed as a result of an impact with a deer. Although the driver initially denied injury at the crash site, the symptoms of her injury surfaced during her examination by the responding emergency medical technicians (EMT's). She was transported to a local hospital with an elevated blood pressure. In the emergency room, she reportedly complained of a burning sensation in her bilateral upper extremities and had some weakness. She also complained of neck pain. She was transferred to a regional trauma center and diagnosed with C5 spinal stenosis with spinal cord compression and central cord syndrome. A C4-C6 cervical fusion surgery was performed two days post-crash. The driver was hospitalized ten days and released with a prognosis of full recovery. The driver's daughter contacted the Crash Investigation Division of the National Highway Traffic Safety Administration in search of data regarding air bag related injuries. Follow-up conversations with the daughter resulted in cooperation for an investigation of the crash under the Special Crash Investigations Program. The case was assigned to the Calspan SCI team on November 23, 2004. The driver had the Chevrolet transported from the Ohio crash site back to her residence in West Virginia and it was available for inspection. The vehicle inspection took place December 8, 2004.</p>			
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**ON-SITE ADULT AIR BAG RELATED SERIOUS INJURY INVESTIGATION
CALSPAN CASE NO: CA04-050**

**VEHICLE: 1996 CHEVROLET CAVALIER
LOCATION: OHIO
CRASH DATE: NOVEMBER, 2004**

BACKGROUND

This investigation focused on the crash severity and injury mechanisms that resulted in a spinal cord injury at C5 of the 62 year old female driver in a 1996 Chevrolet Cavalier, **Figure 1**. The Cavalier was equipped with frontal air bags for the driver and front right passenger that deployed as a result of an impact with a deer. Although the driver initially denied injury at the crash site, the symptoms of her injury surfaced during her examination by the responding emergency medical technicians (EMT's). She was transported to a local hospital with an elevated blood pressure. In the emergency room, she reportedly complained of a burning sensation in her bilateral upper extremities and had some weakness. She also complained of neck pain. She was transferred to a regional trauma center and diagnosed with C5 spinal stenosis with spinal cord compression and central cord syndrome. A C4-C6 cervical fusion surgery was performed two days post-crash. The driver was hospitalized ten days and released with a prognosis of full recovery.



Figure 1: Front left view of the Cavalier.

The driver's daughter contacted the Crash Investigation Division of the National Highway Traffic Safety Administration in search of data regarding air bag related injuries. Follow-up conversations with the daughter resulted in cooperation for an investigation of the crash under the Special Crash Investigations Program. The case was assigned to the Calspan SCI team on November 23, 2004. The driver had the Chevrolet transported from the Ohio crash site back to her residence in West Virginia and it was available for inspection. The vehicle inspection took place December 8, 2004.

SUMMARY

Crash Site

This single-vehicle crash occurred during the evening hours of November, 2004. At the time of the crash, it was dark and the weather was not a factor. The asphalt road surface was dry. The crash occurred on a two-lane state route located in a rural setting. The roadway was oriented in the northwest/southeast direction and was straight and level in the area of the crash. The road configuration was described by the investigating police officer. A scene inspection was not conducted due to its distant location from the vehicle. The posted speed limit was 89 km/h (55 mph).

Crash Sequence

Pre-Crash

At the time of the crash, the 62 year old restrained driver of the Chevrolet was operating the vehicle in a northwesterly direction. The driver's reported height and weight were 155 cm (61 in) and 86 kg (190 lb), respectively. In her interview, the driver stated that her seat was adjusted to an unspecified track position forward of the middle position and the seat back was in an upright position. She was seated in-close proximity to the steering wheel rim and driver air bag due to her short stature. The tilt angle of the steering wheel was adjusted to the lowest position.

The driver's trip plan consisted of traveling from her residence in West Virginia to visit relatives living in Illinois. She reported that her travel speed was approximately 89 km/h (55 mph) and that she was traveling immediately ahead of a passenger car and a tractor trailer. During the normal operation of the vehicle, the driver observed the deer approach the road from the left and cross directly into her path of travel. She reported that she observed the deer and began to brake. However, she then released the brake for fear of the trailing vehicles impacting the rear of her vehicle.

Crash

The left frontal aspect of the Chevrolet struck the deer and the resultant impact induced deceleration was sufficient to cause the deployment of the frontal air bags. The driver was able to maintain control of the vehicle and brought the Chevrolet to a controlled stop on the right shoulder of the road. The trailing vehicle passed the Chevrolet on the left and stopped on the road side in front of the Cavalier. The subject driver exited the vehicle under her own power and engaged in a conversation with the drivers of the trailing vehicles. The subject driver had a cellular phone and called 9-1-1 to report the crash.

Post-Crash

The police and ambulance personnel responded to the crash site. The driver of the Chevrolet initially denied injury and had no visible external soft tissue injuries. However, a routine check of her vital signs revealed an elevated blood pressure and the EMT's suggested she be transported to a hospital for a follow-up exam. As the EMT's began to place her on a backboard, the driver complained of pain in her neck. At that point, she was stabilized and transported via ground ambulance to a local hospital. Upon evaluation, the driver was transferred to a regional trauma center and admitted into the intensive care unit. The driver underwent spinal fusion surgery two days post-crash and was released from the hospital ten days after the crash. The driver then recuperated with family members and recovered over the course of several months.

Reportedly, the Chevrolet was operational post-crash and driven to the hospital parking lot. The driver indicated that she contacted family members after the crash and they came to retrieve the vehicle. These individuals ultimately had trouble keeping the vehicle running and had the vehicle towed back to the driver's home in West Virginia.

AIR BAG VEHICLE

1996 Chevrolet Cavalier

The 1996 Chevrolet Cavalier four-door sedan was identified by the Vehicle Identification Number (VIN): 1G1JF52T5T7 (production sequence deleted). The vehicle was manufactured in May 1996. The odometer had recorded 375,675 km (233,440 miles) at inspection. The driver had purchased the Chevrolet used, approximately one year prior to the crash. The vehicle's power train consisted of a 2.2 liter/I-4 engine linked to a 4-speed automatic transmission. The service brakes were a front disc/rear drum system with ABS. The manual restraint system consisted of 3-point lap and shoulder belts in the four outboard positions and a center rear lap belt. The air bag system consisted of driver and front right passenger air bags. The Sensing and Diagnostic control Module (SDM) that controlled the air bag system was equipped with Event Data Recording (EDR) capabilities. The data stored within the EDR was downloaded at the time of the SCI inspection. The vehicle was equipped with Dean Alpha 365 P205/70R15 tires on OEM steel wheels. The recommended tire pressure was 207 kpa (30 psi). The specific measured tire data was as follows:

Tire	Measured Pressure	Tread Depth	Restricted	Damage
LF	251.9 kPa (36.5 PSI)	3.2 mm (4/32 in)	No	None
LR	282.9 kPa (41.0 PSI)	4.8 mm (6/32 in)	No	None
RF	272.6 kPa (39.5 PSI)	4.0 mm (5/32 in)	No	None
RR	269.1 kPa (39.0 PSI)	4.8 mm (6/32 in)	No	None

Exterior Damage

Figures 2 and 3 are the front and overhead views of the Chevrolet, respectively. The exterior damage to the Chevrolet as a result of the impact with the deer consisted of minor contact evidence to the left and central aspects of the front bumper and a wide region of deformation and buckling of the hood. The front fascia revealed evidence of the contact that began 13.2 cm (5.2 in) left of center and extended 55.4 cm (21.8 in) to the left corner of the front bumper. This contact pattern wrapped around the left corner and extended 33.0 cm (13.0 in) along the forward aspect of the left side plane. There was no measurable residual crush at the elevation of the long the front bumper reinforcement. The Collision Deformation Classification (CDC) was 12-FDEW-1

The surface of the hood was deformed and had buckled. The area of the deformation measured 71 cm x 135 cm (28 in x 53 in), length by width. The hood was displaced rearward and rightward. The left rear corner of the hood impacted the lower left aspect of the windshield resulting in a minor fracture. The left headlamp assembly fractured and separated. The left front fender shifted rearward 1.3 cm (0.5 in). All the doors remained closed during the impact and were operational post-crash. There was no damage to the side windows glazing. The wheelbase dimensions were unchanged.



Figure 3: Front view of the Chevrolet.



Figure 2: Overhead view.

Examination of the engine compartment revealed that the vehicle did not sustain any mechanical damage. The engine was operational. **Figure 4** is an overhead view of the engine compartment. It was noted that the left aspect of the upper radiator support sustained minor rearward displacement that measured 1.9 cm (0.75 in). A formed sheet metal section was attached to the center aspect of the upper radiator support. The sheet metal section contained the hood latch receiver. A forward sensor for the air bag system was mounted to the metal section, as well. The location of the sensor is denoted by the arrow in Figure 4. During the impact, the metal section was displaced rearward into the radiator core, as the hood deformed downward and buckled. The location of the sensor adjacent to the area of the impact and the subsequent localized impact induced deceleration was the cause of the air bag deployment. Refer to the Air Bag Section of this report for further explanation.



Figure 4: Engine compartment view.

Interior Damage

The only identified interior damage was a fracture of the right aspect of the windshield resultant to contact from the front right passenger air bag cover flap during the deployment sequence. There was no intrusion or interior damage related to the exterior crash force. Examination of the vehicle interior was unremarkable for occupant contact evidence. The lack of contact evidence was not unexpected due to the low severity of the crash. The two-spoke tilt steering wheel rim was in the full up position. There was no deformation of the steering wheel rim. There was no shear capsule displacement.

The driver seat was adjusted to a mid-track position that measured 7.6 cm (3.0 in) forward of full rear at the time of the inspection. The total seat track travel measured 20.3 cm (8.0 in). This position was not the at-crash position of the seat. Reportedly, it had been moved by the family members in charge of moving the vehicle back to West Virginia.

Manual Belt System

The vehicle was equipped with manual 3-point lap and shoulder belts in the four outboard positions. The center rear position was lap belt equipped. The driver's restraint consisted of a continuous loop webbing, light weight locking latch plate, and Emergency Locking Retractor (ELR). The adjustable D-ring was in the full up position. Inspection of the latch plate revealed indicators of historical use and the edges of the webbing were frayed indicative of use. It should be noted that the subject driver had only owned the vehicle for approximately one year; therefore these indicators were not fully related to the habits of this driver. During her interview the driver reported that she was a habitual belt user and was restrained at the time of the crash. Examination of the webbing did not reveal any crash related evidence, primarily due to the low severity of the crash force. The downloaded EDR data indicated that the driver was restrained. It was the conclusion of the SCI investigator that the driver was restrained during the crash.

Air Bag System

The 1996 Chevrolet Cavalier was equipped with an air bag system that consisted of driver and front right passenger modules. The system was monitored and controlled by the SDM located under the front right seat. A forward sensor located 15 cm (6 in) right of the center line and immediately forward of the radiator core assisted the SDM in the crash detection. **Figure 5** is a close-up view of the forward sensor location. Due to the deformation and buckling of the hood as a result of the crash, the sensor was directly contacted and displaced. The location of the sensor



Figure 5: Forward air bag sensor location.

and its direct involvement in the area of deformation resulted in a deceleration profile sufficient to cause the deployment of the air bags in this (otherwise) low severity impact.

The air bag system's SDM had EDR capabilities. The Vetronix Crash Data Retrieval (CDR) tool was used to download the recorded crash data at the time of the SCI inspection. The EDR data was accessed via the J1962 plug located under the instrument panel. The downloaded EDR data is attached to the end of this report. The EDR reported that the driver's belt was buckled at the time of the deployment. The maximum recorded delta V was -8.12 km/h (-5.05 mph), 300 milliseconds after Algorithm Enable (AE), and the air bags were commanded to deploy 20 milliseconds after AE. The recorded data was consistent with the reconstructed dynamics of the crash. The EDR data also included a non-deployment event. The data indicated that the non-deployment event occurred 200 ignition cycles prior to the deployment event and was therefore unrelated.

Both deployed air bags were cut out of their respective modules prior to SCI inspection. Reportedly, they were cut out during the vehicle's repair. The air bags were located within the passenger compartment. The driver air bag module was located within the center hub of the

steering wheel. The I-configuration cover flaps were symmetrical and measured 10 cm x 10 cm (4 in x 4 in). **Figures 6 and 7** are views of the front and back of deployed driver air bag, respectively. The driver air bag measured 66 cm (26 in) in diameter in its deflated state. The bag was not tethered and was vented by two 2.5 cm (1.0 in) diameter ports in the 3/9 o'clock sector. Examination of the face of the bag was unremarkable for occupant contact evidence. Minor black vinyl deployment scuffs were identified in the 12 and 6 o'clock sectors.



Figure 6: Face of the driver air bag.

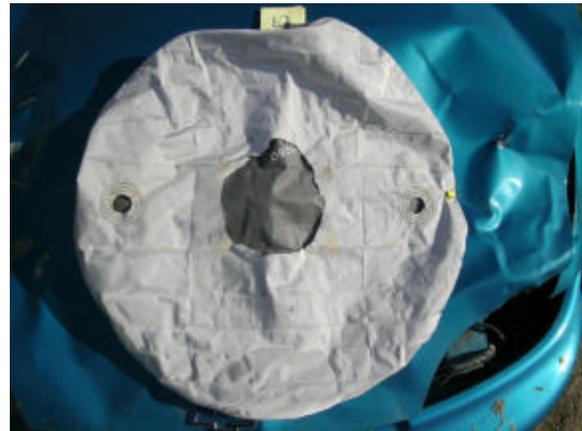


Figure 7: Back side of the driver air bag.

The front right passenger air bag was a top mount design located in the right aspect of the instrument panel. The rectangular cover flap was comprised of vinyl with a sheet metal backer. During the deployment sequence the backer deformed forming a hinge. The cover flap measured 30 cm x 18 cm (12 in x 7 in), width by length. The cover flap contacted and fractured the windshield during its rotation at deployment. The deployed front right passenger air bag measured 46 cm x 61 cm (18 in x 24 in), width by height, in its deflated state. It was tethered by two 8 cm (3 in) wide straps sewn to the face of the bag. The air bag was not externally vented. There was no occupant contact to the passenger air bag.

DRIVER DEMOGRAPHICS

Age/Sex: 62 year old/Female
Height: 155 cm (61 in)
Weight: 86 kg (190 lb)
Seat Position: Forward
Restraint Use: 3-point lap and shoulder
Usage Source: SCI inspection, EDR, Police report
Medical Treatment: Admitted to a regional trauma center for surgery, 10 day hospitalization

DRIVER INJURY

Injury	Injury Severity (AIS 98 update)	Injury Source
C5 spinal stenosis with spinal cord compression and central cord syndrome	Serious (640202.3,6)	Driver air bag related

Note: The above injury and symptoms were identified in the surgical procedure and admission records obtained from the treating trauma center. No other injuries were identified.

DRIVER KINEMATICS

The 62 year old female driver of the Chevrolet was seated in a presumed normal posture in a forward track seat position. She indicated during her interview that the driver’s seat was adjusted to a forward track position and the tilt steering wheel was in its lowest position. She was restrained at the time of the crash by the 3-point manual safety belt.

Upon impact with the deer, the driver air bag deployed. The initial deployment of the driver air bag struck the driver primarily in the chest. As the air bag expanded peripherally, the driver experienced an impulse under the chin sufficient to cause extension of the neck. Due to her pre-existing stenosis, the extension motion was sufficient to cause the spinal cord compression and central cord syndrome. Therefore, the resultant injury was related to the expansion of the driver air bag. However, it was not associated to direct contact with the air bag since the neck was not directly involve with the air bag.

The driver remained in the driver’s seat, maintained control of the Chevrolet and brought the vehicle to a controlled stop at the roadside. She exited the vehicle and did not believe she was injured until the cervical injury manifested itself over time.

Discussion:

Immediately, following the crash, the driver exited the vehicle under her own power post-crash and did not believe she was injured. Upon examination by the responding EMS personnel, an elevated level of blood pressure was identified. Due to her age, prescribed medications and elevated pressure, she was transported by ambulance to the emergency room of a local hospital. During this period of time, the symptom of her cervical injury manifested themselves. In order to properly diagnosis her condition; the driver was transferred to a regional trauma center. Upon admission to the trauma center, the driver complained of severe neck pain. She also complained of a burning sensation in her bilateral upper extremities and a small amount of weakness bilaterally.

The medical records indicated the treating physician diagnosed the driver with central cord syndrome and X-rays of the cervical spine indicated some spondylolisthesis (forward displacement) of C4 on C5. Additionally, diagnostic Magnetic Resonance Imaging (MRI) of the cervical spine revealed degenerative changes had occurred and that the driver had developed cervical spinal stenosis at the same (C5) level. This stenosis (narrowing of the spinal column) predisposed the driver to this type of cervical injury and complicated properly sourcing the injury. Moreover, the degree of stenosis was such that any stressors beyond the magnitude of every day living could have triggered a cervical injury.

The medical records were reviewed by an independent physician and it was concluded that this injury was caused by neck extension. The lack of facial, chin, and/or neck abrasions, typically associated to direct contact with an expanding air bag, indicated the driver was at the outer limits of the bag's expansion. However, the driver probably sustained a large enough impulse to the face/chin at the later stages of bag expansion to cause head/neck extension, but not cause identifiable abrasive-type injury.

ATTACHMENT A

EDR DATA

CDR File Information

Vehicle Identification Number	1G1JF52T5T7xxxxxx
Investigator	
Case Number	
Investigation Date	
Crash Date	
Filename	CA04-050 CDR.CDR
Saved on	Wednesday, December 8 2004 at 10:18:02 AM
Data check information	209CFEC7
Collected with CDR version	Crash Data Retrieval Tool 2.61
Collecting program verification number	CB788FCD
Reported with CDR version	Crash Data Retrieval Tool 2.61
Reporting program verification number	CB788FCD
Interface used to collected data	Block number: 00 Interface version: 41 Date: 11-04-04 Checksum: 9E00
Event(s) recovered	Deployment Non-Deployment

SDM Data Limitations

SDM Recorded Crash Events:

There are two types of SDM recorded crash events. The first is the Non-Deployment Event. A Non-Deployment Event is an event severe enough to "wake up" the sensing algorithm but not severe enough to deploy the air bag(s). The SDM can store up to one Non-Deployment Event. This event can be overwritten by an event that has a greater SDM recorded forward velocity change. This event will be cleared by the SDM after the ignition has been cycled 250 times.

The second type of SDM recorded crash event is the Deployment Event. The SDM can store up to two different Deployment Events, if they occur within five seconds of one another. Deployment events cannot be overwritten or cleared from the SDM. Once the SDM has deployed the air bag, the SDM must be replaced.

The data in the non-deployment file will be locked after a deployment, if the non-deployment occurred within 5 seconds before the deployment or a deployment level event occurs within 5 seconds after the deployment.

SDM Data Limitations:

-SDM Recorded Vehicle Forward Velocity Change reflects the change in forward velocity that the sensing system experienced during the recorded portion of the event. SDM Recorded Vehicle Forward Velocity Change is the change in velocity during the recording time and is not the speed the vehicle was traveling before the event, and is also not the Barrier Equivalent Velocity. This data should be examined in conjunction with other available physical evidence from the vehicle and scene when assessing occupant or vehicle forward velocity change. The SDM records the first 300 milliseconds of Vehicle Forward Velocity Change after Algorithm Enable. The maximum value that can be recorded for Vehicle Forward Velocity Change is 56 MPH.

-Driver's Belt Switch Circuit Status indicates the status of the driver's seat belt switch circuit.

-The Time between Non-Deployment and Deployment Events is displayed in seconds. If the time between the two events is greater than five seconds, "N/A" is displayed in place of the time.

-If power to the SDM is lost during a crash event, all or part of the crash record may not be recorded. An indication of a loss of power would be if the ignition cycles at Deployment or Non-Deployment is recorded as zero. Data recorded after that may not be reliable, such as Time Between Non-Deployment and Deployment Events and Driver Belt Switch Circuit Status.

In some cases, if the non-deployment event is closely followed by a deployment event, the EDR may record all of the SDM Recorded Vehicle Forward Velocity Change values as zero mph.

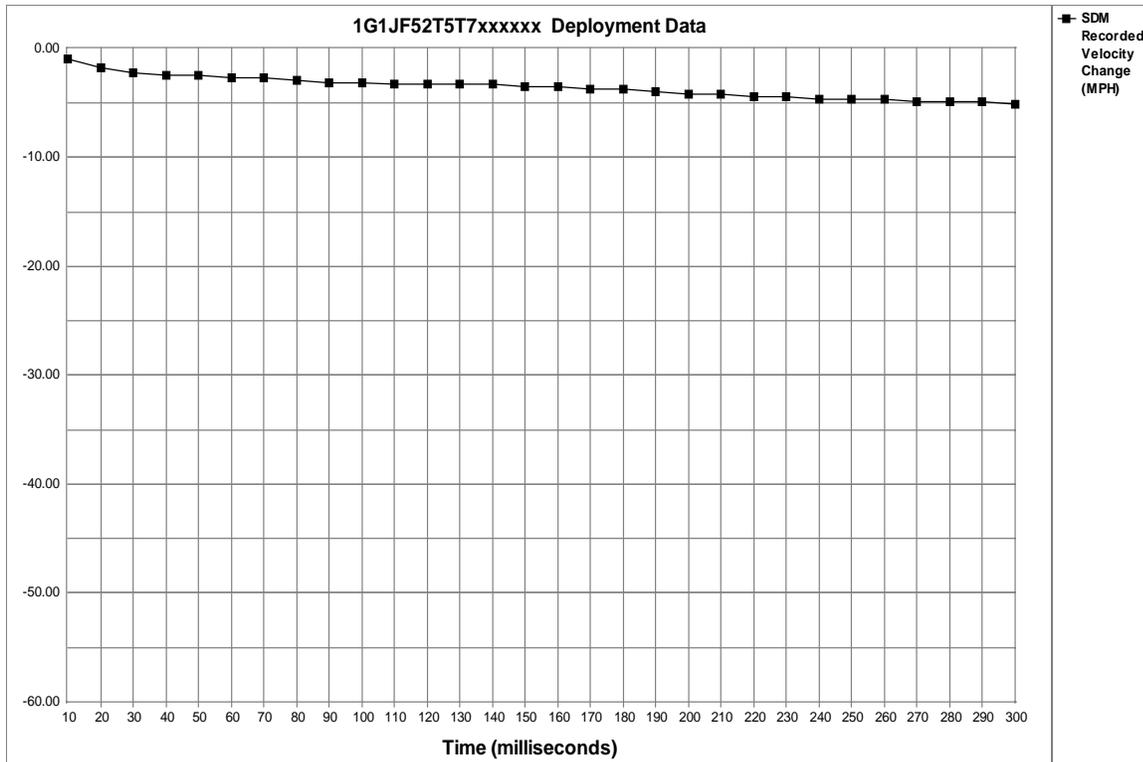
SDM Data Source:

All SDM recorded data is measured, calculated, and stored internally, except for the following:

-The Driver's Belt Switch Circuit is wired directly to the SDM.

System Status At Deployment

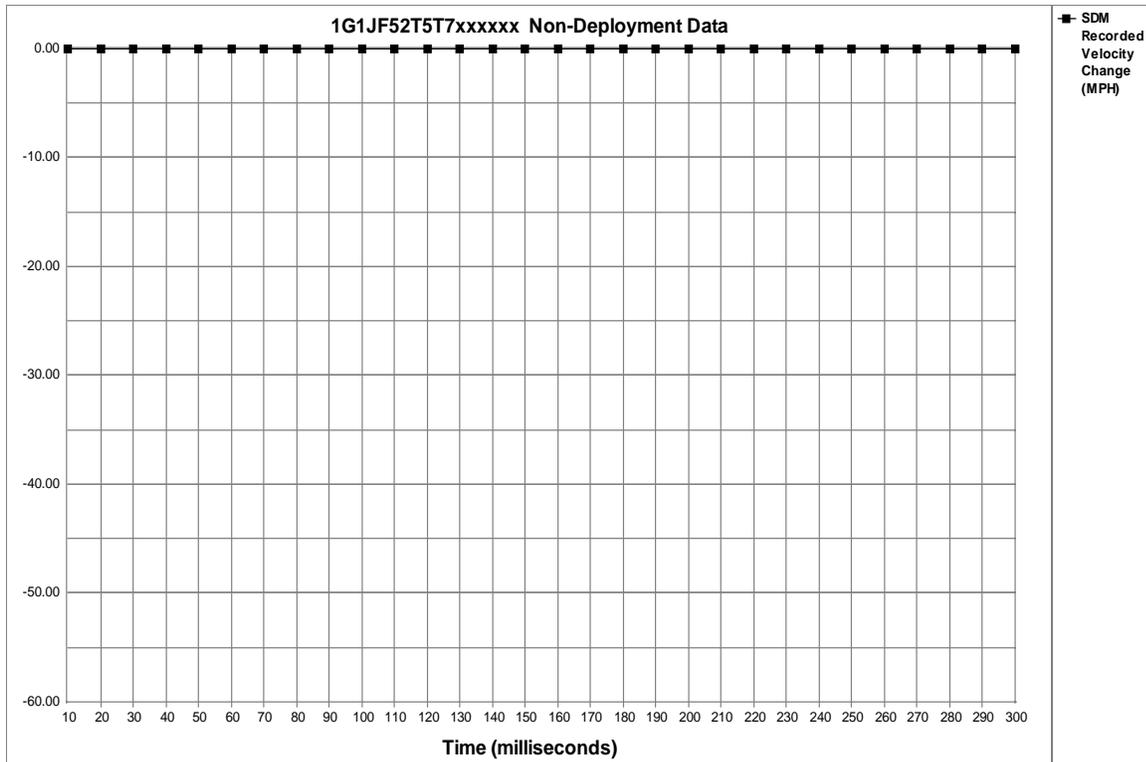
SIR Warning Lamp Status	OFF
Driver's Belt Switch Circuit Status	BUCKLED
Ignition Cycles At Deployment	20798
Ignition Cycles At Investigation	20818
Time From Algorithm Enable To Deployment Command (msec)	20
Time Between Non-Deployment And Deployment Events (sec)	N/A



Time (milliseconds)	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Recorded Velocity Change (MPH)	-0.88	-1.76	-2.19	-2.41	-2.41	-2.63	-2.63	-2.85	-3.07	-3.07	-3.29	-3.29	-3.29	-3.29	-3.51
Time (milliseconds)	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
Recorded Velocity Change (MPH)	-3.51	-3.73	-3.73	-3.95	-4.17	-4.17	-4.39	-4.39	-4.61	-4.61	-4.61	-4.83	-4.83	-4.83	-5.05

System Status At Non-Deployment

SIR Warning Lamp Status	OFF
Driver's Belt Switch Circuit Status	UNBUCKLED
Ignition Cycles At Non-Deployment	20598
Ignition Cycles At Investigation	20818
Algorithm Enable to Maximum SDM Recorded Velocity Change (msec)	1.25
Maximum SDM Recorded Velocity Change (MPH)	-0.22
A Deployment was Commanded Prior to this Event	No



Time (milliseconds)	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Recorded Velocity Change (MPH)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Time (milliseconds)	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
Recorded Velocity Change (MPH)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hexadecimal Data

This page displays all the data retrieved from the air bag module.
It contains data that is not converted by this program.

```
B600: 20 42 40 80 80 00 00 00
B608: 00 00 00 00 00 00 00 00
B610: 00 00 00 AA 00 53 F9 F9
B618: F9 44 F9 F9 F9 F9 FF AA
B620: AA AA 00 00 AA 00 00 7D
B628: 00 02 00 10 04 08 0A 0B
B630: 0B 0C 0C 0D 0E 0E 0F 0F
B638: 0F 0F 10 10 11 11 12 13
B640: 13 14 14 15 15 15 16 16
B648: 16 17 51 3E 13 00 00 FF
B650: 00 55 AA AA AA 55 03 AA
B658: 00 00 7D 00 00 00 01 01
B660: 00 00 00 00 00 00 00 00
B668: 00 00 00 00 00 00 00 00
B670: 00 00 00 00 00 00 00 00
B678: 00 00 00 00 00 00 50 76
B680: 00 00 00 55 AA AA AA AA
B688: 00 00 00 91 93 00 00 91
B690: 94 00 00 C6 95 00 00 81
B698: 8E 00 00 81 8F 00 00 82
B6A0: 90 00 00 86 91 00 00 8F
B6A8: 92 00 00 00 00 00 00 00
B6B0: BB BE BA A5 B4 BE AC 8C
B6B8: 96 B4 E9 EC B0 92 6E C6
B6C0: 34 4E 1A 01 00 64 02 00
B6C8: 00 AA 00 01 01 00 00 00
B6D0: 00 00 00 00 00 00 00 00
B6D8: 00 00 00 00 00 00 00 00
B6E0: 00 00 45 4C 00 00 02 4A
B6E8: 02 AA 00 00 00 00 00 00
B6F0: 28 08 F0 05 50 04 0C 29
B6F8: 64 FF FF FF 2B 36 44 4D
B700: 50 5A 5C 68 6D 6F 70 70
B708: 71 7C 7E 83 85 85 85 87
B710: 8D 91 94 96 96 96 96 9C
B718: A7 B2 BB C7 D1 DB E2 ED
B720: F5 40 43 45 48 4A 4C 4E
B728: 50 52 54 55 57 59 5A 5C
B730: 5D 5F 60 61 63 64 65 66
B738: 67 67 68 69 69 69 69 6A
B740: 6B 6C 6C 6C 6C 6D 6D 6E
B748: 6E 6F 6F 6F 6F 6F 70 70
B750: 70 70 70 71 71 71 71 71
B758: 71 71 71 71 71 00 6C 00
B760: E0 0A 24 3C 22 12 15 06
B768: 0A AA 00 4C 4D FF FF FF
B770: 29 34 3F 47 49 55 57 63
B778: 67 6A 6B 6B 6B 74 77 79
B780: 7A 7A 7A 7D 83 86 88 89
B788: 89 89 89 89 89 89 89 89
B790: 89 89 89 89 89 89 89 89
B798: 89 89 89 89 8B 8C 8C 8C
B7A0: 8C 8C 8C 8C 8C 8C 8C 8C
B7A8: 8C 8C 8C 8C 8C 8C 8C 8C
B7B0: 8C 8C 8C 8C 8C 90 92 94
B7B8: 97 FF FF FF FF 00 00 B6
B7C0: 39 00 00 00 00 00 00 00
B7C8: 00 00 00 00 00 00 00 00
B7D0: 00 00 00 00 00 00 00 00
B7D8: 00 00 00 00 00 00 00 00
B7E0: 00 00 00 00 00 00 00 00
B7E8: 00 00 00 00 00 00 00 00
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