SAE International™

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J1698-1

ISSUED MAR2005

Issued 2005-03

Vehicle Event Data Interface—Output Data Definition

TABLE OF CONTENTS

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: custsvc@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

SAE 100 Leading Our World In Motion

TABLE OF CONTENTS (CONT.)

TABLE OF CONTENTS (CONT.)

1. Scope

This document is part of the J1698 document family, and provides the definitions for event-related data items.

1.1 Purpose

Vehicular event data recording and extraction has several potential uses. These include diagnostic and operational information of the on-board occupant protection system, crash reconstruction, and improved highway safety. A standard format for vehicle event data output will help facilitate these uses, and possibly more, by improving the efficient use of the extracted data.

1.2 Rationale

Not applicable.

2. References

2.1 Applicable Publications

The following publications form a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J211—Part 1, Instrumentation for Impact Test-Part 1—Electronic Instrumentation
SAE J670—Vehicle Dynamics Terminology
SAE J1698—Vehicle Event Data Interface—Vehicular Output Data Definition
SAE J1698-1—Vehicle Event Data Interface—Vehicular Output Data Definition
SAE J1698-2—Vehicle Event Data Interface—Vehicular Data Extraction
SAE J1979—E/E Diagnostic Test Methods—Equivalent to ISO/DOS 15031-5: April 30, 2002

2.1.2 OTHER PUBLICATIONS

Electronic 2002 FARS Coding and Validation Manual, U.S. Department of Transportation, National Highway Traffic Safety Administration, ftp://ftp.nhtsa.dot.gov/fars/FARS-DOC/, “2002 FARS C&V Manual.zip”

3. *Terms and Definitions*

3.1 Impact Event

A frontal impact event is an occasion where either the frontal occupant restraint control algorithm is activated or, for continuously running algorithms, where a longitudinal, cumulative Delta-V of over 0.8 km/h (0.5 mph) is reached within a 20 millisecond time period. In applying the same logic to side and rear impact events, however, a 5-millisecond time period should be used for a side impact event, instead of 20 milliseconds.

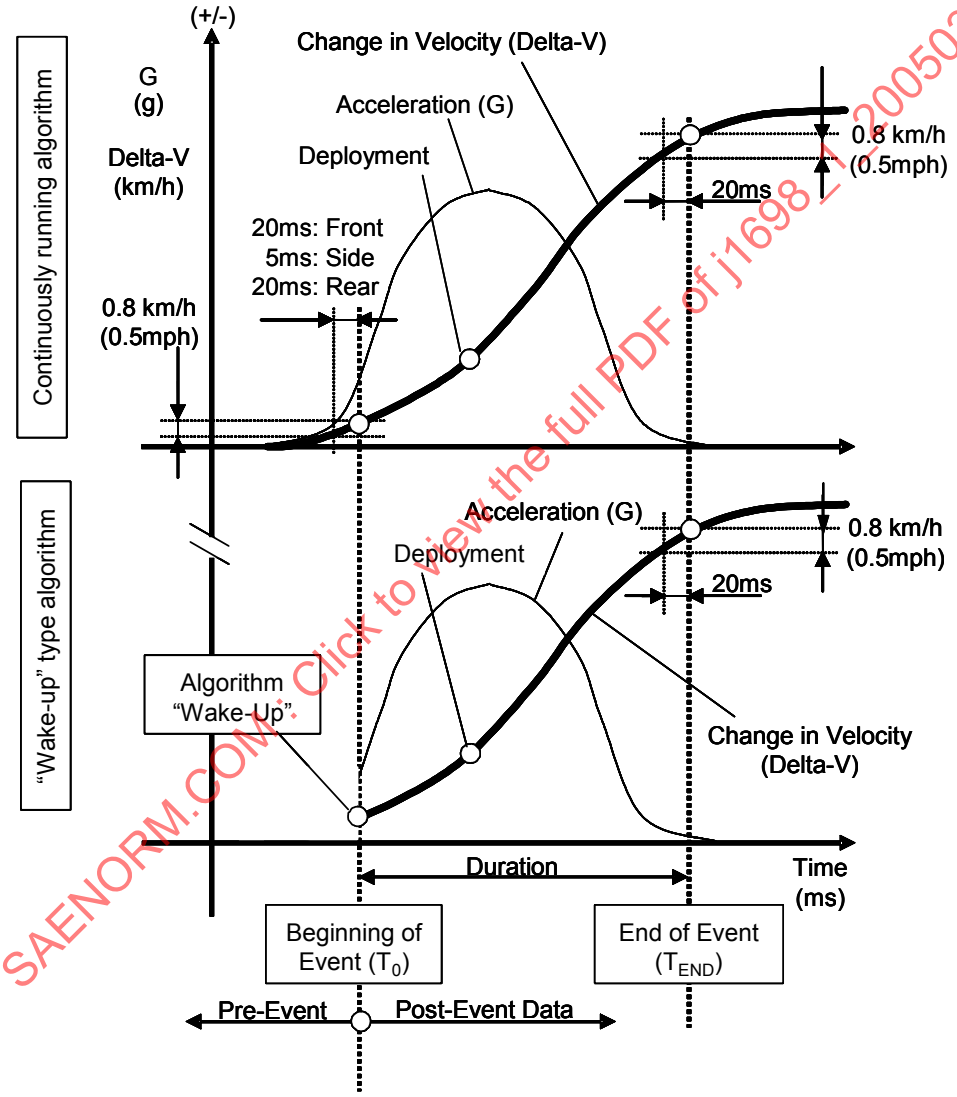

FIGURE 1—COMMON REFERENCING DATA POINTS OF AN IMPACT EVENT[1]

[1] This figure is a very simplified image of event data to illustrate common referencing data points and it is not drawn to scale. Depending on the direction of impact, delta-V and/or acceleration data may be in either positive or negative values. See SAE J211 and J670 for sign conventions.

Therefore, depending on the circumstances, a frontal-, side- or rear-impact event can result in either a deployment or non-deployment of an occupant restraint system. The occurrence of a frontal, side and rear impact event shall not be interpreted as the physical impact of the subject vehicle with another object. In addition, readers should be aware of the possibility that the vehicle is not always in parallel to the ground during an impact event.

Due to the complex nature of automobile accidents, accident prevention and mitigation countermeasures for impact events vary significantly among vehicle types, manufactures and event circumstances. Therefore, readers should be aware of the risk that the beginning/end/duration of impact events may not serve as a common temporal reference point among various output data sets.

3.1.1 BEGINNING OF IMPACT EVENT

The beginning of a frontal impact event (T_0) is either the moment when the frontal occupant restraint control algorithm is activated or, for continuously running algorithms, the moment when the longitudinal, cumulative Delta-V of over 0.8 km/h (0.5 mph) is reached within a 20 millisecond time period. The same logic is applied to side and rear impact events. Table 1 shows the different conditions used to define the beginning of impact events.

The beginning of an impact event (defined herein) shall not be interpreted as the moment when the subject vehicle makes a first physical contact with another object. The beginning of an event also does not mark the condition that determines whether to save the event data associated with the event for subsequent retrieval. The condition for permanently saving an event record is vehicle and manufacturer specific based on a vehicle's unique structure and design. The purpose of defining the beginning of an event is to enable the alignment of traces from dissimilar recording devices.

TABLE 1—THRESHOLD FOR BEGINNING OF EACH IMPACT EVENT (CONSTANTLY-RUNNING ALGORITHM)

	Frontal Impact	Side Impact	Rear Impact
Direction of Acceleration Data	Longitudinal	Lateral	Longitudinal
Cumulative Delta-V within a Time Period	≥ +0.8 km/h within 20 milliseconds	≥ +0.8 km/h or ≤ -0.8 km/h within 5 milliseconds	≤ -0.8 km/h within 20 milliseconds

3.1.2 END OF IMPACT EVENT

The end of a frontal impact event (T_{END}) is at the moment when the longitudinal, cumulative Delta-V within a 20-millisecond time period becomes 0.8 km/h (0.5 mph) or less. If T_{END} was not captured, TIME TO MAXIMUM DELTA-V (6.3.4.2), if available, may be substituted for T_{END} when a) the recorded crash-pulse time-history is truncated (cut short) before meeting the 0.8 km/h change in velocity within 20 millisecond criterion, and b) the time to the maximum Delta-V is longer than the truncated crash pulse recording time period. The same logic is applied to side and rear impact events.

TABLE 2—THRESHOLD FOR END OF EACH IMPACT EVENT (CONSTANTLY-RUNNING ALGORITHM)

	Frontal Impact	Side Impact	Rear Impact
Direction of Acceleration Data	Longitudinal	Lateral	Longitudinal
Cumulative Delta-V in a Time Period	≤ +0.8 km/h within 20 milliseconds	≤ +0.8 km/h and ≥ -0.8 km/h within 20 milliseconds	≥ -0.8 km/h within 20 milliseconds

The end of impact event shall not be interpreted as the moment when the subject vehicle comes to a complete stop. It should be also noted that the vehicle could have a higher velocity at the end of an impact event than at the beginning of the impact event.

3.1.3 DURATION OF IMPACT EVENT

The duration of an impact event is defined by the time between the beginning of an impact event (T_0) and the end of the impact event (T_{END}). Duration of an impact event is not a fixed time and will vary for each event.

This definition of the duration of impact event shall not be interpreted as a mandatory data recording period of vehicular event data.

3.2 Rotational Event

A rotational event is an occasion (1) where vehicle dynamics and/or occupant restraint control systems intervene to prevent an imminent rollover or pitch-over, (2) where a rollover or pitch-over occupant restraint control algorithm is activated, and/or (3) where a deployment decision is made to activate a restraint control system for a rollover or pitch-over accident. Therefore, depending on the circumstances, a rotational event can result in either a deployment or non-deployment of an occupant restraint system.

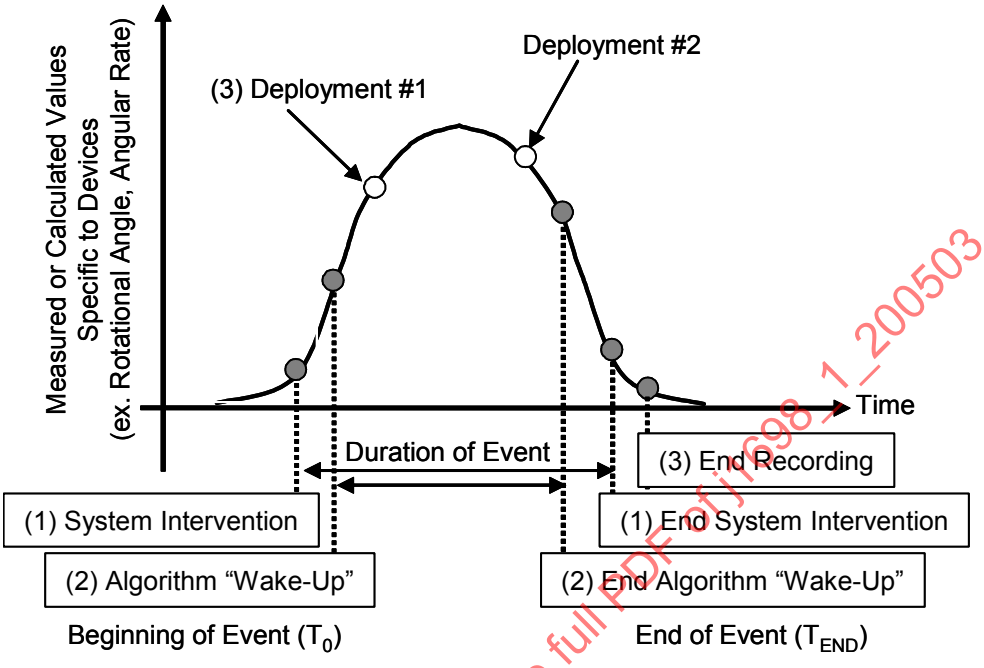

FIGURE 2—COMMON REFERENCING DATA POINTS OF A ROTATIONAL EVENT[2]

Due to the complex nature of rotational events, accident prevention and mitigation countermeasures for rollover or pitch-over events vary significantly among vehicle types, manufactures and event circumstances. Therefore, readers should be aware of the risk that the beginning/end/duration of rotational event may not serve as a common temporal reference point among various output data sets.

3.2.1 BEGINNING OF ROTATIONAL EVENT

The beginning of a rotational event (T_0) is defined by either at the moment (1) when vehicle dynamics and/or occupant restraint control systems intervene to prevent an imminent rollover or pitch-over, (2) when a rollover or pitch-over occupant restraint control algorithm is activated, or (3) when the first deployment decision is made to activate a restraint control system for a rollover or pitch-over accident.

The beginning of an event also does not mark the condition that determines whether to save the event data associated with the event for subsequent retrieval. The condition for permanently saving an event record is vehicle and manufacturer specific based on a vehicle's unique structure and design. The purpose of defining the beginning of an event is to enable the alignment of traces from dissimilar recording devices.

[2] This figure is a very simplified image of event data to illustrate common referencing data points and it is not drawn to scale.

In addition, the beginning of a rotational event shall not be interpreted as the moment when the subject vehicle starts to tip over.

3.2.2 END OF ROTATIONAL EVENT

The end of a rotational event (T_{END}) is defined by either at the moment (1) when the vehicle dynamics control system completes its intervention for imminent rollover or pitch-over accident prevention or (2) when the operation mode of rollover or pitch-over occupant restraint control systems is set back to an idle mode from the previous activated mode. If T_{END} is not captured, the last data point may be used as the end of the event (3).

The end of a rotational event shall not be interpreted as the moment when the subject vehicle comes to a complete stop. It should be also noted that the vehicle could have a higher data value, such as angular rate, at the end of a rotational event than at the beginning of the rotational event.

3.2.3 DURATION OF ROTATIONAL EVENT

The duration of a rotational event is defined by the time between the beginning of rotational event (T_0) and the end of rotational event (T_{END}).

Duration of a rotational event is not a fixed time and can vary significantly for each event. This definition of the duration of rotational event shall not be interpreted as a mandatory data recording period of vehicular event data.

3.3 G

The upper case “G” is the data element name for the acceleration of a vehicle. The lower case “g” is the unit of acceleration (1 g = 9.80665 m/s^2). The crash pulse is the acceleration-time history of the event.

3.4 High-Frequency Data

High-frequency data have a 100 Hz sampling rate (10-millisecond intervals) or higher.

3.5 Low-Frequency Data

Low-frequency data have a 1 Hz sampling rate (1-second intervals) or higher.

3.6 Static Data

Static data are recorded only once per event.

It is preferred to use the data captured at the beginning of the event (T_0) as the static data output, therefore, it is assumed that these static data outputs represent the vehicle condition at the moment of the beginning of the event (T_0). However, due to a wide variety of accident types and vehicle electronics systems, the exact timing when these static data are recorded may not be the same across different vehicle lines. See Table 8 for a list of static data elements.

3.7 Vehicle Coordinate System

The same coordinate system (axis and direction) that is defined in SAE J211-1 applies to this recommended practice.

3.8 Data Not Available

"Data not available" indicates the condition when a particular data does not exist in the output data, and is therefore not available. Unless otherwise specified, the maximum possible hexadecimal value of $F, $FF, $FFFF or $FFFFFF is used as a common value to describe this condition in the output data.

3.9 Invalid Data

"Invalid data" indicates the condition when a particular data exists in the output data however it is not readable or is corrupted, and is therefore not usable as a valid data. When the value of a particular output data exceeds the specified data range in this document, the data is also treated as "invalid data." Unless otherwise specified, the hexadecimal value that is one count smaller then the maximum possible hexadecimal value of $E, $FE, $FFFE or $FFFFFE is used as a common value to describe this condition in the output data.

4. Available Time Period for Event Data Output

This section is intended to encompass the maximum duration that any manufacturer is considering recording, realizing that many manufacturers will record substantially less than this duration of data.

4.1 High-Frequency Data

While this recommended practice does not intend to dictate the amount of time that data shall be recorded, the common data output format shall provide for the capability of reporting high-frequency data surrounding a frontal impact event for up to 100 milliseconds of pre-event and 300 milliseconds of post-event data. Maximum reporting time periods for the other types of events are provided in Table 3.

TABLE 3—MAXIMUM DURATION OF HIGH-FREQUENCY DATA RECORDING

(millisecond)	Impact			Rotational	
	Frontal	Side	Rear	Rollover	Pitch-over
Pre-Event	100	50	100	0	0
Post-Event	300	100	300	750	750

When a vehicle system does not have enough capability to record high-frequency data items during a rotational event at a 100Hz or higher sampling rate, it is permitted to report those high-frequency data items as low-frequency data (1Hz or higher sampling rate). When reporting those data as low-frequency data, each datum is reported in relation to the first low-frequency data point after the beginning of event (T_0 for high-frequency data) and not to 6.1.2.4 Vehicle Acceleration Timestamp. See Figure 3 for the temporal relationship between low- and high-frequency data.

4.2 Low-Frequency Data

While this recommended practice does not intend to dictate the amount of time that data shall be recorded, the common data format shall provide for the capability of reporting low-frequency data surrounding a crash for up to 8 seconds of pre-event and 5 seconds of post event data. The capability is the same for all Impact and Rotational events.

4.3 Temporal Relationship between Low- and High-Frequency Data

Low-frequency data and high-frequency data may not be synchronized within the same time scale. The beginning of an impact event (T_0 of the high-frequency data series) corresponds with the first post-event data point of the high-frequency data. T=0 is defined as the first low frequency data point on or after T_0.

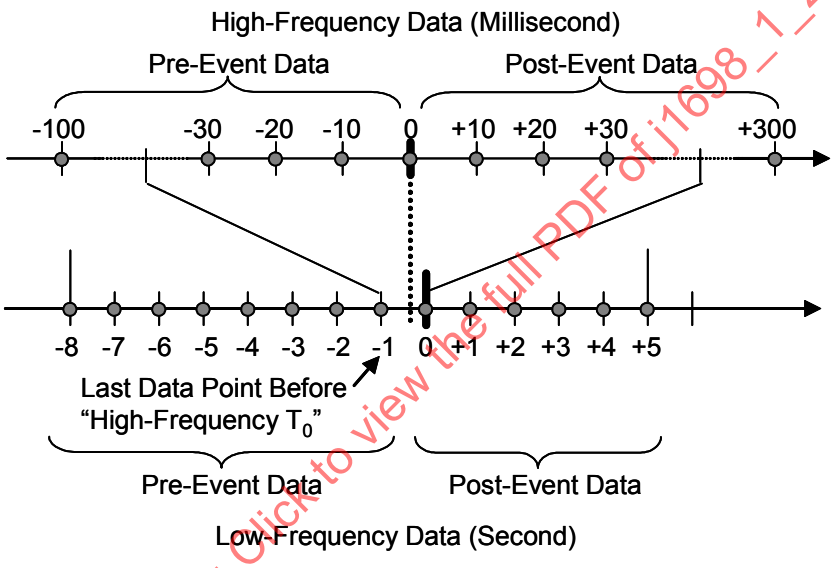

FIGURE 3—TEMPORAL RELATIONSHIPS BETWEEN LOW- AND HIGH-FREQUENCY DATA

5. Data Elements

5.1 Data Element Format Definition

5.1.1 Byte Position Convention

Some data values include descriptions that are based on byte positions within the message. The convention used in this recommended practice is that the first byte is referred to as "byte #1," and the last byte is referred to as "byte #8," as shown in the table below.

TABLE 4—BYTE POSITION CONVENTION

Byte #1	Byte #2	Byte #3	Byte #4	Byte #5	Byte #6	Byte #7	Byte #8

This recommended practice does not refer to or require the use of any particular data transmission protocols to send a message. The length of messages in this recommended practice varies from 1 bit to 17 bytes.

5.1.2 BIT POSITION CONVENTION

Some data byte values include descriptions that are based on bit positions within the byte. The convention used this recommended practice is that the most significant bit (MSB) is referred to as "bit 7," and the least significant bit (LSB) is referred to as "bit 0," as shown in the table below.

TABLE 5—BIT POSITION CONVENTION

MSB							LSB
Bit #7	Bit #6	Bit #5	Bit #4	Bit #3	Bit #2	Bit #1	Bit #0

5.2 Vehicular Output Data Elements

This recommended practice does not refer to or require the use of any particular data transmission protocols to send a message. The following table lists the data elements that are specified in this document. The length of data elements in this recommended practice varies from 1 bit to 17 bytes.

TABLE 6—LIST OF DATA ELEMENTS: HIGH-FREQUENCY DATA

Section	Data Element	Data Length
6.1.1	Change in Velocity (Delta-V)	
6.1.1.1	Longitudinal Delta-V	1 byte
6.1.1.2	Lateral Delta-V	1 byte
6.1.2	Vehicle Acceleration (G)	
6.1.2.1	Longitudinal G	2 bytes
6.1.2.2	Lateral G	
6.1.2.2.1	Lateral G High Range	2 bytes
6.1.2.2.2	Lateral G Low Range	1 byte
6.1.2.3	Vertical G Low Range	1 byte
6.1.2.4	Vehicle Acceleration Timestamp	2 bytes
6.1.3	Rotational Angle	
6.1.3.1	Roll Angle	1 byte
6.1.3.2	Pitch Angle	1 byte
6.1.3.3.	Yaw Angle	1 byte
6.1.4	Rotational Angular Rate	
6.1.4.1	Roll Rate	1 byte
6.1.4.2	Pitch Rate	1 byte
6.1.4.3	Yaw Rate	1 byte

TABLE 7—LIST OF DATA ELEMENTS: LOW FREQUENCY DATA

Section	Data Element	Data Length
6.2.1	Vehicle Traveling Speed	1 byte
6.2.2	Engine Revolution	1 byte
6.2.3	Throttle Position	
6.2.3.1	Engine Throttle Position	1 byte
6.2.3.2	Throttle Pedal Position	1 byte
6.2.4	Steering Angle	1 byte
6.2.5	Driver Controls – Dynamic	
6.2.5.1	Brake Pedal Switch Status	2 bits
6.2.5.2	Turn Signal Switch Status	3 bits
6.2.6	Engine Torque Ratio	1 byte
6.2.7	Yaw Rate	1 byte
6.2.8	Vehicle System Status	
6.2.8.1	Gear Position	4 bits
6.2.8.2	Anti-Lock Brake System Status	2 bits
6.2.8.3	Traction Control System Status	2 bits
6.2.8.4	Stability Control System Status	2 bits

TABLE 8—LIST OF DATA ELEMENTS: STATIC DATA

Section	Data Element	Data Length
6.3.1	Vehicle Identification Number	17 bytes
6.3.2	Restraint System Use	
6.3.2.1.	Seating Position	1 byte
6.3.2.2	Seatbelt Buckle Switch Status	2 bits
6.3.2.3	Foremost Seat Track Position Switch Status	2 bits
6.3.3	SRS Deployment Information	
6.3.3.1	SRS Deployment Status	1 byte
6.3.3.2	SRS Deployment Time	1 byte
6.3.4	Maximum Recorded Delta-V Information	
6.3.4.1	Maximum Recorded Longitudinal Delta-V	1 byte
6.3.4.2	Maximum Recorded Lateral Delta-V	1 byte
6.3.4.3	Time to Maximum Recorded Delta-V	1 byte
6.3.5	Indicator Status	
6.3.5.1	VEDI Warning Lamp Status	2 bits
6.3.5.2	SRS Warning Lamp Status	2 bits
6.3.5.3	Passenger Airbag Disable Indicator Status	2 bits
6.3.5.4	Low Tire Pressure Warning Lamp Status	2 bits
6.3.5.5	Service Engine Soon Indicator Status	2 bits
6.3.5.6	Door Ajar Indicator Status	2 bits
6.3.5.7	Door Lock Status	2 bits
6.3.5.8	Battery-Off Device Deployed	2 bits
6.3.5.9	Service Vehicle Indicator Status	2 bits
6.3.5.10	Brake Warning Indicator Status	2 bits
6.3.6	Vehicle Mileage	2 bytes
6.3.7	Ignition Cycle	
6.3.7.1	Ignition Cycle at Event	2 bytes
6.3.7.2	Ignition Cycle at Download	2 bytes
6.3.8	Hours in Operation	2 bytes
6.3.9	Latitude	
6.3.9.1	Latitude-Degree	1 byte
6.3.9.2	Latitude-Minute	1 byte
6.3.9.3	Latitude-Second	1 byte
6.3.10	Longitude	
6.3.10.1	Longitude-Degree	1 byte
6.3.10.2	Longitude-Minute	1 byte
6.3.10.3	Longitude-Second	1 byte
6.3.11	Accident Date	
6.3.11.1	Accident Date-Year	1 byte
6.3.11.2	Accident Date-Month	1 byte
6.3.11.3	Accident Date-Day	1 byte
6.3.12	Accident Time	
6.3.12.1	Accident Time-Hour	1 byte
6.3.12.2	Accident Time-Minute	1 byte
6.3.12.3	Accident Time-Second	1 byte
6.3.13	Temperature	
6.3.13.1	Ambient Temperature	1 byte
6.3.13.2	Cabin Temperature	1 byte
6.3.14	Cruise Control System Status	2 bits
6.3.15	Driver Controls-Static	
6.3.15.1	Parking Brake Switch Status	2 bits
6.3.15.2	Headlight Switch Status	2 bits
6.3.15.3	Front Wiper Switch Status	2 bits
6.3.15.4	Gear Selection Status	2 bits
6.3.15.5	Passenger Airbag Disabling Switch Status	2 bits
6.3.16	Event Data Recording Complete	1 byte
6.3.17	Type of Recorded Rollover Event	1 byte
6.3.18	Occurrence of Pitch-Over Event	2 bits
6.3.19	Initial Event Type	1 byte

6. Data Definition

6.1 High Frequency Data

6.1.1 Change in Velocity (Delta-V)

6.1.1.1 Longitudinal Delta-V

TABLE 9—DATA DEFINITION

Data Element		Description			
LONGITUDINAL DELTA-V		Change in longitudinal vehicle speed during an event. LONGITUDINAL DELTA-V is only the longitudinal component of the total Delta-V. Up to 41 data points from -100 milliseconds to +300 milliseconds in approximately 10 milliseconds intervals, relative to the beginning of the event (T_0), the time corresponding to the LONGITUDINAL DELTA-V stored is implied by the memory location it is stored in.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Km/h	1 km/h	1 km/h per bit	-127 km/h	+126 km/h
Format				*Note*	
Signed Numeric (signed 2's complement)				Data collected at higher than 100Hz should be averaged. Partial data should be stored in the next higher location (for example, data at 1ms intervals 111-116 ms should be averaged and stored as 120ms). See Figure A1 for an example.	

TABLE 10—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$FD	$FE	$FF
Data Value	-127 km/h	-126 km/h	…	+126 km/h	Invalid Data	Data Not Available

6.1.1.2 Lateral Delta-V

TABLE 11—DATA DEFINITION

Data Element		Description			
LATERAL DELTA-V		Change in lateral vehicle speed during an event. LATERAL DELTA-V is only the lateral component of the total Delta-V. Up to 41 data points from -100 milliseconds to +300 milliseconds in approximately 10 millisecond intervals, relative to the beginning of event (T_0) are allocated for LATERAL DELTA-V; the time corresponding to the LATERAL DELTA-V data element stored is implied by the memory location it is stored in.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Km/h	1 km/h	1 km/h per bit	-127 km/h	+126 km/h
Format				*Note*	
Signed Numeric (signed 2's complement)				Data collected at higher than 100Hz should be averaged. Partial data should be stored in the next higher location (for example, data at 1ms intervals 111-116 ms should be averaged and stored as 120ms).	

TABLE 12—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$FD	$FE	$FF
Data Value	-127 km/h	-126 km/h	…	+126 km/h	Invalid Data	Data Not Available

6.1.2 VEHICLE ACCELERATION DATA

6.1.2.1 Longitudinal G

TABLE 13—DATA DEFINITION

Data Element		Description			
LONGITUDINAL G		Longitudinal acceleration of the vehicle measured in g's during an event. Up to 401 data points from -100 milliseconds to +300 milliseconds in approximately 10 millisecond intervals, relative to the beginning of the event (T_0) are allocated to LONGIDUTINAL G; the time corresponding to each LONGITUDINAL G data element should be paired with and indicated by the corresponding VEHICLE ACCELERATION TIMESTAMP (6.1.2.4).			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bytes	g	0.01 g	0.01 g per bit	-327.67 g	+327.66 g's
Format				*Note*	
Appropriate filtering methods in SAE J211 should be applied to raw acceleration data series before reporting and plotting. Apply CFC 60[3] for acceleration data collected at 1000 Hz sampling rate.				1g = 9.80665 m/s^2 When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4). See Figure A2 for an example.	

TABLE 14—SIGNAL VALUE DESCRIPTION

Signal Value	$0000	$0001	…	$FFFD	$FFFE	$FFFF
Data Value	-327.67 g	-327.66 g	…	+327.66 g	Invalid Data	Data Not Available

[3] CFC 60 is a Butterworth, 4-pole phase-less digital filter for vehicle acceleration data recorded at 1000 Hz sampling rate (see SAE J211 Part 1, Appendix C, March 1995).

6.1.2.2 Lateral G

6.1.2.2.1 Lateral G High Range

TABLE 15—DATA DEFINITION

Data Element		Description			
LATERAL G HIGH RANGE		Lateral acceleration of the vehicle in g's during an impact event. Up to 151 data points from -50 milliseconds to +100 milliseconds in approximately 10 millisecond intervals, relative to the beginning of the event (T_0) are allocated to LATERAL G HIGH RANGE; the time corresponding to each LATERAL G HIGH RANG data element should be paired with and indicated by the VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bytes	g	0.01 g	0.01 g per bit	-327.67 g	+327.66 g
Format				*Note*	
Appropriate filtering methods in SAE J211 should be applied to raw acceleration data series before reporting and plotting. Apply CFC 60[4] for acceleration data collected at 1000 Hz sampling rate.				1g = 9.80665 m/s^2 When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).	

TABLE 16—SIGNAL VALUE DESCRIPTION

Signal Value	$0000	$0001	…	$FFFD	$FFFE	$FFFF
Data Value	-327.67 g	-327.66 g	…	+327.66 g	Invalid Data	Data Not Available

6.1.2.2.2 Lateral G Low Range

TABLE 17—DATA DEFINITION

Data Element		Description			
LATERAL G LOW RANGE		Lateral acceleration of the vehicle in g's during an impact or rotational event. Up to 151 data points from -50 milliseconds to +100 milliseconds relative to the beginning of the event (T_0) are allocated to the LATERAL G LOW RANGE; the time corresponding to each LATERAL G LOW RANGE data element should be paired with and indicated by the VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 bytes	g	0.1 g	0.1 g per bit	-12.7 g	+12.6 g
Format				*Note*	
Appropriate filtering methods in SAE J211 should be applied to raw acceleration data series before reporting and plotting. Apply CFC 60 for acceleration data collected at 1000 Hz sampling rate.				1g = 9.80665 m/s^2 When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4). See Table A7 for an example.	

[4] CFC 60 is a Butterworth, 4-pole phase-less digital filter for vehicle acceleration data recorded at 1000 Hz sampling rate (see SAE J211 Part 1, Appendix C, March 1995).

TABLE 18—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$FD	$FE	$FF
Data Value	-12.7 g	-12.6 g	…	+12.6 g	Invalid Data	Data Not Available

6.1.2.3 *Vertical G Low Range*

TABLE 19—DATA DEFINITION

Data Element		Description			
VERTICAL G LOW RANGE		Vertical acceleration of the vehicle in g's during an impact or rotational event. Up to 401 data points from -100 milliseconds to +300 milliseconds relative to the beginning of the event (T_0), the time corresponding to each VERTICAL G LOW RANGE data should be paired with and indicated by the VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 bytes	g	0.1 g	0.1 g per bit	-12.7 g	+12.6 g
Format				*Note*	
Appropriate filtering methods in SAE J211 should be applied to raw acceleration data series before reporting and plotting. Apply CFC 60 for acceleration data collected at 1000 Hz sampling rate.				1g = 9.80665 m/s^2 When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).	

TABLE 20—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$FD	$FE	$FF
Data Value	-12.7 g	-12.6 g	…	+12.6 g	Invalid Data	Data Not Available

6.1.2.4 *Vehicle Acceleration Timestamp*

TABLE 21—DATA DEFINITION

Data Element		Description			
VEHICLE ACCELERATION TIMESTAMP		Time in milliseconds during an event to indicate the temporal position of each vehicle acceleration data (6.1.2), rotational angle data (6.1.3) and/or rotational angular rate (6.1.4) data relative to the beginning of event (T_0=0).			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bytes	millisecond	0.01 millisecond	0.01 millisecond per bit	-100.00 milliseconds	+300.00 milliseconds
Format				*Note*	
				Each data in this series is always paired with a corresponding data from Section 6.1.2, 6.1.3, and/or 6.1.4. See Table A7 for an example.	

TABLE 22—SIGNAL VALUE DESCRIPTION

Signal Value	$0000	$0001	…	$FFFD	$FFFE	$FFFF
Time Data Value	-327.67 milliseconds	-327.66 milliseconds	…	+327.66 milliseconds	Invalid Data	Data Not Available

6.1.3 ROTATIONAL ANGLE

6.1.3.1 Roll Angle

TABLE 23—DATA DEFINITION

Data Element				Description	
ROLL ANGLE				Angle of the vehicle around X-axis during an event, where 0 degree is parallel to the ground.	
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree	2 deg	2 deg per bit	0 deg	+358 deg
		Format			*Note*
					When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4). See Figure A3, Figure A5 and Table A7 for examples.

TABLE 24—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$02	$B2	$B3	$FE	$FF
Data Value	0 deg	+2 deg	+4 deg	+356 deg	+358 deg	Invalid Data	Data Not Available

6.1.3.2 Pitch Angle

TABLE 25—DATA DEFINITION

Data Element				Description	
RITCH ANGLE				Angle of the vehicle around Y-axis during an event, where 0 degree is parallel to the ground.	
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree	2 deg	2 deg per bit	0 deg	+358 deg
		Format			*Note*
					When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).

TABLE 26—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$02	$B2	$B3	$FE	$FF
Data Value	0 deg	+2 deg	+4 deg	+356 deg	+358 deg	Invalid Data	Data Not Available

6.1.3.3 Yaw Angle

TABLE 27—DATA DEFINITION

Data Element				Description	
YAW ANGLE		Angle of the vehicle around Z-axis during an event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree	2 deg	2 deg per bit	0 deg	+358 deg
Format				*Note*	
				When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).	

TABLE 28—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$02	$B2	$B3	$FE	$FF
Data Value	0 deg	+2 deg	+4 deg	+356 deg	+358 deg	Invalid Data	Data Not Available

6.1.4 ROTATIONAL ANGULAR RATE

6.1.4.1 Roll Rate

TABLE 29—DATA DEFINITION

Data Element				Description	
ROLL RATE		Rate of rotational directional change of the vehicle around the X axis. Rate of change in roll angle.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree per second	5 deg/sec	5 deg/sec per bit	-635 deg/sec	+630 deg/sec
Format				*Note*	
				When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4). See Table A7 for an example.	

TABLE 30—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$2F	$7F	$CF	$FD	$FE	$FF
Data Value	-635 deg/sec	-400 deg/sec	0 deg/sec	+400 deg/sec	+630 deg/sec	Invalid Data	Data Not Available

6.1.4.2 *Pitch Rate*

TABLE 31—DATA DEFINITION

Data Element			Description		
PITCH RATE			Rate of rotational directional change of the vehicle around the Y axis. Rate of change in pitch angle.		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree per second	5 deg/sec	5 deg/sec per bit	-635 deg/sec	+630 deg/sec
Format				*Note*	
				When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).	

TABLE 32—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$2F	$7F	$CF	$FD	$FE	$FF
Data Value	-635 deg/sec	-400 deg/sec	0 deg/sec	+400 deg/sec	+630 deg/sec	Invalid Data	Data Not Available

6.1.4.3 *Yaw Rate*

TABLE 33—DATA DEFINITION

Data Element			Description		
YAW RATE			Rate of rotational directional change of the vehicle around the Z axis. Rate of change of yaw angle.		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree per second	5 deg/sec	5 deg/sec per bit	-635 deg/sec	+630 deg/sec
Format				*Note*	
				When reported as a high-frequency data, each data in this series is always paired with a corresponding VEHICLE ACCELERATION TIMESTAMP data (6.1.2.4).	

TABLE 34—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$2F	$7F	$CF	$FD	$FE	$FF
Data Value	-635 deg/sec	-400 deg/sec	0 deg/sec	+400 deg/sec	+630 deg/sec	Invalid Data	Data Not Available

6.2 Low Frequency Data[5]

6.2.1 VEHICLE TRAVELING SPEED

TABLE 35—DATA DEFINITION

Data Element		Description			
VEHICLE TRAVELING SPEED		The longitudinal velocity of the vehicle that is calculated or estimated from the on-board sensor output.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Km/h	1 km/h	1km/h per bit	0 km/h	+253 km/h
		Format			*Note*
					1 km/h =0.62137 mph See Figure A4, Table A4 and Table A7 for examples.

TABLE 36—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$64	$E7	$FE	$FF
Data Value	0 km/h	+1 km/h	+100 km/h	+231 km/h	Invalid Data	Data Not Available

6.2.2 ENGINE REVOLUTION

TABLE 37—DATA DEFINITION

Data Element		Description			
ENGINE REVOLUTION		Rotational frequency of the engine output shaft.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	rpm	64 rpm	64 rpm per bit	0 rpm	+16192 rpm
		Format			*Note*
					See Figure A4 and Table A4 for examples.

TABLE 38—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$04	…	$FD	$FE	$FF
Data Value	0 rpm	+256 rpm	…	+16192 rpm	Invalid Data	Data Not Available

[5] See 3.5 for sampling rate and 4.2 for data recording time period.

6.2.3 THROTTLE POSITION

6.2.3.1 Engine Throttle Position

TABLE 39—DATA DEFINITION

Data Element		Description			
ENGINE THROTTLE POSITION		Percentage ratio of the engine throttle opening.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	%	1 %	1% per bit	0 %	+100 %
		Format			*Note*
					See Figure A4 and Table A4 for examples.

TABLE 40—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$64	$FE	$FF
Data Value	0 %	+1 %	…	+100 %	Invalid Data	Data Not Available

6.2.3.2 Throttle Pedal Position

TABLE 41—DATA DEFINITION

Data Element		Description			
THROTTLE PEDAL POSITION		Percentage ratio of the throttle pedal opening (driver's operation).			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	%	1 %	1% per bit	0 %	+100 %
		Format			*Note*
					See Figure A4 and Table A4 for examples.

TABLE 42—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$64	$FE	$FF
Data Value	0 %	+1 %	…	+100 %	Invalid Data	Data Not Available

6.2.4 STEERING ANGLE

TABLE 43—DATA DEFINITION

Data Element		Description			
STEERING ANGLE		Degree of the steering position where the value of zero (0 degree) is at its neutral position (i.e. straight). A positive value indicates the steering wheel is turned clockwise (i.e. right)			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	degree	2 degrees	2 degrees per bit	-254 degrees	+252 degrees
		Format			*Note*
					See Figure A4 and Table A4 for examples.

TABLE 44—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$57	$7F	$A7	$FD	$FE	$FF
Data Value	-254 degrees	-80 degrees	0 degree	+80 degrees	+252 degrees	Invalid Data	Data Not Available

6.2.5 DRIVER CONTROLS – DYNAMIC

6.2.5.1 Brake Pedal Switch Status

TABLE 45—DATA DEFINITION

Data Element		Description			
BRAKE PEDAL SWITCH STATUS		BRAKE PEDAL SWITCH STATUS indicates the status of the switch that is installed in or connected to the brake pedal system to detect whether or not the pedal was pressed. This switch is usually used to turn on the rear brake lamps.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*
					See Figure A4 and Table A4 for examples.

TABLE 46—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Switch Status	Off (not On)	On	Invalid Data	Data Not Available

6.2.5.2 Turn Signal Switch Status

TABLE 47—DATA DEFINITION

Data Element		Description			
TURN SIGNAL SWITCH STATUS		TURN SIGNAL SWITCH STATUS indicates the status of the switch that is usually installed in the steering column to detect whether or not the driver indicated his/her intention to make a turn. This switch is used to turn on the side turning lamps.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
3 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*
					See Table A4 for an example.

TABLE 48—SIGNAL VALUE DESCRIPTION

Signal Value	*$0*	*$1*	*$2*	*$7*	*$8*
Switch Status	Neutral	Left	Right	Invalid Data	Data Not Available

6.2.6 ENGINE TORQUE

TABLE 49—DATA DEFINITION

Data Element		Description			
ENGINE TORQUE		Torque value in percentage at the engine output shaft where 0% is no torque output (0 Nm) and 100% is the maximum torque output of the engine.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	%	1 %	1 %	0 %	100 %
		Format			*Note*
					1 Nm = 0.101972 Kgf-m

TABLE 50—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$64	$FE	$FF
Data Value	0 %	1 %	…	100 %	Invalid Data	Data Not Available

6.2.7 YAW RATE

TABLE 51—DATA DEFINITION

Data Element		Description			
YAW RATE		Rate of horizontal rotational directional change around the Z axis.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree per second	1 deg/sec	1 deg/sec per bit	-127 deg/sec	+126 deg/sec
Format				*Note*	

TABLE 52—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$2F	$7F	$CF	$FD	$FE	$FF
Data Value	-127 deg/sec	-80 deg/sec	0deg/sec	+80 deg/sec	+126 deg/sec	Invalid Data	Data Not Available

6.2.8 VEHICLE SYSTEM STATUS

6.2.8.1 Gear Position

TABLE 53—DATA DEFINITION

Data Element		Description			
GEAR POSITION		GEAR POSITION indicates the gear of the transmission is in at the time of event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
4 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	
For Continuously-Variable Transmissions (CVT), use $1 to describe the condition when the transmission is in a forward-moving mode.				See Table A4 for an example.	

TABLE 54—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3	$4	$5	$6
Gear Selection	Park	1st	2nd	3rd	4th	5th	6th
Signal Value	*$7*		*$9*	*$A*		*$E*	*$F*
Gear Selection Data Availability	7th		Reverse	Neutral		Invalid Data	Data Not Available

6.2.8.2 Anti-Lock Brake System Status

TABLE 55—DATA DEFINITION

Data Element		Description			
ANTI-LOCK BRAKE SYSTSM STATUS		Status of anti-lock brake system whether activated or not.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	

TABLE 56—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
System Status	Not Activated	Activated	Invalid Data	Data Not Available

6.2.8.3 Traction Control System Status

TABLE 57—DATA DEFINITION

Data Element			Description		
TRACTION CONTROL SYSTEM STATUS		Status of traction control system whether activated or not.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*

TABLE 58—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
System Status	Not Activated	Activated	Invalid Data	Data Not Available

6.2.8.4 Stability Control System Status

TABLE 59—DATA DEFINITION

Data Element			Description		
STABILITY CONTROL SYSTEM STATUS		Status of stability control system whether activated or not.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*

TABLE 60—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
System Status	Not Activated	Activated	Invalid Data	Data Not Available

6.3 Static Data

6.3.1 VEHICLE IDENTIFICATION NUMBER

TABLE 61—DATA DEFINITION: VEHICLE IDENTIFICATION NUMBER

Data Element			Description		
VEHICLE IDENTIFICATION NUMBER (VIN)		This element indicates the Vehicle Identification Number (VIN), assigned by the vehicle manufacturer.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
17 bytes	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*
SAE J1979 Table G3 – Vehicle Identification number Data Bytes Description				See Table A5 for an example.	

TABLE 62—SIGNAL VALUE DESCRIPTION

Signal Value	$30	$31	$32	$33	$34	$35	$36	$37	$38	$39
Data Value	0	1	2	3	4	5	6	7	8	9
Signal Value	$41	$42	$43	$44	$45	$46	$47	$48	$49	$4A
Data Value	A	B	C	D	E	F	G	H	I	J
Signal Value	$4B	$4C	$4D	$4E	$4F	$50	$51	$52	$53	$54
Data Value	K	L	M	N	O	P	Q	R	S	T
Signal Value	$55	$56	$57	$58	$59	$5A	$FE	$FF		
Data Value	U	V	W	X	Y	Z	Invalid Data	Data Not Available		

6.3.2 RESTRAINT SYSTEM USE

6.3.2.1 Seating Position

TABLE 63—DATA DEFINITION

Data Element		Description			
SEATING POSITION		Position of vehicle occupants.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*
FARS, Seating Position					This data is used in combination with SEATBELT BUCKLE SWTICH STATUS (6.3.2.2), FOREMOST SEAT TRACK POSITION SWITCH (6.3.2.3), SRS DEPLOYMENT STATUS (6.3.3.1), and SRS DEPLOYMENT TIME (6.3.3.2) to connect those data to specific seating location. See Tables A6 and A7 for examples.

TABLE 64—SIGNAL VALUE DESCRIPTION

Signal Value	$11	$12	$13	$FE	$FF
Seating Position	Front Left (Driver)	Front Center	Front Right	Invalid Data	Data Not Available
Signal Value	*$21*	*$22*	*$23*		
Seating Position	2nd Row Left	2nd Row Center	2nd Row Right		
Signal Value	*$31*	*$32*	*$33*		
Seating Position	3rd Row Left	3rd Row Center	3rd Row Right		

6.3.2.2 *Seatbelt Buckle Switch Status*

TABLE 65—DATA DEFINITION

Data Element				Description	
SEATBELT BUCKLE SWITCH STATUS				This signal reports whether a seatbelt buckle switch is at on or off position. This data only indicates the status of the seatbelt buckle switch. It does not indicate the existence of an occupant in the seat nor whether the routing of the seatbelt itself is behind or in front of an occupant. In addition, when a child seat is installed properly, this switch should be at the on position even though a child is not present.	
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*
					This data should be reported in combination with a specific SEATING POSITION (6.3.2.1). See Table A6 for an example.

TABLE 66—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Seatbelt Buckle Switch	Off (not On)	On	Invalid Data	Data Not Available

6.3.2.3 *Foremost Seat Track Position Switch Status*

TABLE 67—DATA DEFINITION

Data Element				Description	
FOREMOST SEAT TRACK POSITION SWITCH STATUS				This signal reports the status of the switch that is installed into the seat system to detect whether the seat is moved to a forward position.	
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*
					This data should be reported in combination with a specific SEATING POSITION (6.3.2.1). See Table A6 for an example.

TABLE 68—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Foremost Seat Track Position Switch	Off (not On)	On	Invalid Data	Data Not Available

6.3.3 SRS DEPLOYMENT INFORMATION

6.3.3.1 SRS Deployment Status

TABLE 69—DATA DEFINITION

Data Element		Description			
SRS DEPLOYMENT STATUS		Status of each SRS device for each seating position. A message should be reported for every existing vehicle occupant passive restraint system.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	
				This data should be reported in combination with a specific SEATING POSITION (6.3.2.1). In addition, this data should be used in combination with SRS DEPLOYMENT TIME (6.3.3.2) to indicate the time of deployment of these SRS devices. See Table A6 and A7 for examples.	

TABLE 70—SIGNAL VALUE DESCRIPTION: DEPLOYMENT STATUS

Signal Value	$00	$01	$02
Primary Stage Front Airbag Deployed	No	Yes	Other Deployment Status
Signal Value	*$10*	*$11*	*$13*
Secondary Stage Front Airbag Deployed	No	Yes	Other Deployment Status
Signal Value	*$20*	*$21*	*$22*
Seat-Mount Side Thorax Airbag Deployed	No	Yes	Other Deployment Status
Signal Value	*$30*	*$31*	*$32*
Seat-Mount Side Pelvis Airbag Deployed	No	Yes	Other Deployment Status
Signal Value	*$40*	*$41*	*$42*
Door-Mount Side Airbag Deployed	No	Yes	Other Deployment Status
Signal Value	*$50*	*$51*	*$52*
Knee Airbag Deployed	No	Yes	Other Deployment Status
Signal Value	*$60*	*$61*	*$62*
Side Curtain Airbag Deployed	No	Yes	Other Deployment Status
Signal Value	*$70*	*$71*	*$72*
Seatbelt Buckle Pre-Tensioner Deployed	No	Yes	Other Deployment Status
Signal Value	*$80*	*$81*	*$82*
Retractor Pre-Tensioner Deployed	No	Yes	Other Deployment Status
Signal Value	*$90*	*$91*	*$92*
Seatbelt Airbag Deployed	No	Yes	Other Deployment Status
Signal Value	*$A0*	*$A1*	*$A2*
Seat Cushion Airbag (Anti-Submarine Device)	No	Yes	Other Deployment Status
Signal Value	*$B0*	*$B1*	*$B2*
Hood Hinge	No	Yes	Other Deployment Status
Signal Value	*$C0*	*$C1*	*$C2*
Hood Airbag	No	Yes	Other Deployment Status
Signal Value	*$E0*	*$E1*	*$E2*
Other Supplemental Occupant Restraint System Deployed	No	Yes	Other Deployment Status
Signal Value		*$FE*	*$FF*
Data Availability		Invalid Data	Data Not Available

6.3.3.2 SRS Deployment Time

TABLE 71—DATA DEFINITION

Data Element			Description		
SRS DEPLOYMENT TIME			The elapsed time since the beginning of the event (T_0) until the deployment decision was made.		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	millisecond	1 millisecond	1 millisecond per bit	0 millisecond	+253 milliseconds
Format				*Note*	
				This data should be reported in combination with a specific SEATING POSITION (6.3.2.1). See Table A6 for an example. In addition, this data should be used in combination with SRS DEPLOYMENT TIME (6.3.3.1). See Tables A6 and A7 for examples.	

TABLE 72—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$FD	$FE	$FF
Data Value	0 millisecond	+1 millisecond	…	+253 milliseconds	Invalid Data	Data Not Available

6.3.4 MAXIMUM RECORDED DELTA-V INFORMATION

6.3.4.1 Maximum Recorded Longitudinal Delta-V

TABLE 73—DATA DEFINITION

Data Element			Description		
MAXIMUM RECORDED LONGITUDINAL DELTA-V			The maximum value of the recorded longitudinal Delta-V data in the event. It should be noted that the maximum recorded longitudinal Delta-V may be recorded beyond the duration of event (i.e., after the end of a frontal impact event).		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Km/h	1 km/h	1 km/h per bit	-127 km/h	+126 km/h
Format				*Note*	
Identical to LONGITUDINAL DELTA-V (6.1.1.1)				This data should be used in combination with TIME TO MAXIMUM RECORDED DELTA-V (6.3.4.3). See Table A5 for an example.	

TABLE 74—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$FD	$FE	$FF
Data Value	-127 km/h	-126 km/h	…	+126 km/h	Invalid Data	Data Not Available

6.3.4.2 Maximum Recorded Lateral Delta-V

TABLE 75—DATA DEFINITION

Data Element			Description		
MAXIMUM RECORDED LATERAL DELTA-V			The maximum value of the recorded lateral Delta-V data in the event. It should be noted that the maximum recorded lateral Delta-V may be recorded beyond the duration of event (i.e., after the end of a frontal impact event).		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Km/h	1 km/h	1 km/h per bit	-127 km/h	+126 km/h
Format				*Note*	
Identical to LATERAL DELTA-V (6.1.1.2)				This data should be used in combination with TIME TO MAXIMUM RECORDED DELTA-V (6.3.4.3).	

TABLE 76—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$FD	$FE	$FF
Data Value	-127 km/h	-126 km/h	…	+126 km/h	Invalid Data	Data Not Available

6.3.4.3 Time to Maximum Recorded Delta-V

TABLE 77—DATA DEFINITION

Data Element			Description		
TIME TO MAXIMUM RECORDED DELTA-V			The time from the beginning of the event when the maximum value was recorded. It should be noted that the maximum recorded Delta-V may be recorded beyond the duration of the event (i.e., after the end of an frontal impact event).		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	millisecond	2.5 milliseconds	2.5 milliseconds per bit	0 millisecond	+637.5 milliseconds
Format				*Note*	
				This data should be used in combination with MAXIMUM RECORDED LONGITUDINAL DELTA-V (6.3.4.1) or MAXIMUM RECORDED LATERAL DELTA-V (6.3.4.2). See Table A5 for an example.	

TABLE 78—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	…	$FD	$FE	$FF
Data Value	0 millisecond	+2.5 milliseconds	…	+637.5 milliseconds	Invalid Data	Data Not Available

6.3.5 INDICATOR STATUS

The indicator status of “on” is the condition when a signal to turn on the indicator is transmitted from an on-board device to the indicator and does not necessary show that the indicator is actually turned on. The indicator status of “off” is the condition when the above “on” signal is not transmitted while the vehicle on-board electronics system is properly functioning.

6.3.5.1 VEDI Warning Lamp Status

TABLE 79—DATA DEFINITION

Data Element		Description			
VEDI WARNIGN LAMP STATUS		VEDI WARNIGN LAMP STATUS indicates the status of an indicator in the instrument panel that provides the information to the driver of the data recorder failure or malfunction when lit.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	

TABLE 80—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
VEDI Warning Lamp	Off (not On)	On	Invalid Data	Data Not Available

6.3.5.2 Supplemental Restraint System Warning Lamp Status

TABLE 81—DATA DEFINITION

Data Element		Description			
SUPPLEMENTAL RESTRAINT SYSTEM WARNING LAMP STATUS		SUPPLEMENT RESTRAINT SYSTEM WARNING LAMP STATUS indicates the status of an indicator in the instrument panel that provides the information to the driver of the existence of an SRS system malfunction when lit.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	

TABLE 82—SIGNAL VALUE DESCRIPTION

Signal Value	*$0*	*$1*	*$2*	*$3*
Supplemental Restraint System Warning Lamp	Off (not On)	On	Invalid Data	Data Not Available

6.3.5.3 Passenger Airbag Disabled Indicator Status

TABLE 83—DATA DEFINITION

Data Element		Description			
PASSENGER AIRBAG DISABLED INDICATOR STATUS		PASSENGER AIRBAG DISABLED INDICATOR STATUS indicates the status of an indicator in the instrument panel that provides information to the driver and passengers that the front passenger airbag is suppressed.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	
				Also see PASSENGER AIRBAG DISABLE SWITCH STATUS (6.3.15.5) and PASSENGER AIRBAG DISABLE INDICATOR STATUS (6.3.5.3).	

TABLE 84—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Passenger Airbag Disabled Indicator	Off (not On)	On	Invalid Data	Data Not Available

6.3.5.4 *Low Tire Pressure Warning Lamp Status*

TABLE 85—DATA DEFINITION

Data Element	Description
LOW TIRE PRESSURE WARNING LAMP STATUS	LOW TIRE PRESSURE WARNING LAMP STATUS indicates the status of the indicator in the instrument panel that provides information to the driver when the on-board tire pressure monitoring system has detected that the tire pressure in one or more tire(s) is low.

Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	

TABLE 86—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Low Tire Pressure Warning Lamp	Off (not On)	On	Invalid Data	Data Not Available

6.3.5.5 *Service Engine Soon Indicator Status*

TABLE 87—DATA DEFINITION

Data Element	Description
SERVICE ENGINE SOON INDICATOR STATUS	SERVICE ENGINE SOON INDICATOR STATUS indicates the status of the indicator in the instrument panel that provides information to the driver that the on-board diagnostic system has detected malfunction in the emission control and monitoring system.

Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	

TABLE 88—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Service Engine Soon Indicator	Off (not On)	On	Invalid Data	Data Not Available

6.3.5.6 *Door Ajar Indicator Status*

TABLE 89—DATA DEFINITION

Data Element	Description
DOOR AJAR INDICATOR STATUS	DOOR AJAR INDICATOR STATUS indicates the status of the indicator in the instrument panel that provides information to the driver when a door or gate is not completely closed.

Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	
				See Table A5 for an example.	

TABLE 90—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Door Ajar Indicator	Off (not On)	On	Invalid Data	Data Not Available

6.3.5.7 *Door Lock Status*

TABLE 91—DATA DEFINITION

Data Element		Description			
DOOR LOCK STATUS		DOOR LOCK STATUS indicates the status of the door locks (i.e., whether they are locked or not locked).			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*

TABLE 92—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Door Lock	Unlocked (not Locked)	Locked	Invalid Data	Data Not Available

6.3.5.8 *Battery-Off Device Deployed*

TABLE 93—DATA DEFINITION

Data Element		Description			
BATTERY-OFF DEVICE DEPLOYED		BATTERY-OFF DEVICE DEPLOYED indicates the status of the system that disconnects the power supply from an on-board battery (or batteries) during an event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*

TABLE 94—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Battery-Off Device Deployed	Not Deployed	Deployed	Invalid Data	Data Not Available

6.3.5.9 *Service Vehicle Indicator Status*

TABLE 95—DATA DEFINITION

Data Element		Description			
SERVICE VEHICLE INDICATOR STATUS		SERVICE VEHICLE INDICATOR STATUS indicates the status of the indicator in the instrument panel that provides information to the driver that the on-board diagnostic system has detected malfunction in the vehicle system.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*

TABLE 96—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Service Vehicle Indicator	Off (not On)	On	Invalid Data	Data Not Available

6.3.5.10 Brake Warning Indicator Status

TABLE 97—DATA DEFINITION

Data Element		Description			
BRAKE WARNING INDICATORS STATUS		BRAKE WARNING INDICATORS STATUS indicates the status of an indicator in the instrument panel that provides the information to the driver of the existence of a brake system malfunction when lit.			
Data Length	Unit	Resolution	Scaling	Minimum Value	Maximum Value
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				Note	

TABLE 98—SIGNAL VALUE DESCRIPTION

Signal Value	*$0*	*$1*	*$2*	*$3*
Brake Warning Indicator Status	Off (not On)	On	Invalid Data	Data Not Available

6.3.6 VEHICLE MILEAGE

TABLE 99—DATA DEFINITION: VEHICLE MILEAGE

Data Element		Description			
VVEHICLE MILEAGE		Odometer reading of the vehicle at the beginning of the event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 byte	Km	10 km	10 km per bit	0 km	+655,320 km
Format				*Note*	
				1 km = 0.621371 mile See Table A5 for an example.	

TABLE 100—SIGNAL VALUE DESCRIPTION

Signal Value	$0000	$0001	…	$FFFD	$FFFE	$FFFF
Data Value	0 km	+10 km	…	+655,320 km	Invalid Data	Data Not Available

6.3.7 IGNITION CYCLE

6.3.7.1 Ignition Cycle at Event

TABLE 101—DATA DEFINITION: IGNITION CYCLE

Data Element		Description			
IGNITION CYCLE AT EVENT		Numbers that the ignition switch was turned ON at the moment when the event occurred since the fist use of this control unit.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bytes	Count	1 Count	1 Count per bit	0 count	65533 Counts
Format				*Note*	
SAE J1979 Table E36 – Unit and Scaling ID $24 Definition				See Tables A5 and A7 for examples.	

TABLE 102—SIGNAL VALUE DESCRIPTION

Signal Value	$0000	$0001	…	$FFFD	$FFFE	$FFFF
Data Value	0 count	+1 count	…	+65533 counts	Invalid Data	Data Not Available

6.3.7.2 Ignition Cycle at Download

TABLE 103—DATA DEFINITION: IGNITION CYCLE

Data Element			Description		
IGNITION CYCLE AT DOWNLOAD			Numbers that the ignition switch was turned ON at the moment when the data is downloaded from the vehicle since the fist use of this control unit.		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bytes	Count	1 Count	1 Count per bit	0 count	+65533 Counts
Format				*Note*	
SAE J1979 Table E36 – Unit and Scaling ID $24 Definition				See Tables A5 and A7 for examples.	

TABLE 104—SIGNAL VALUE DESCRIPTION

Signal Value	$0000	$0001	…	$FFFD	$FFFE	$FFFF
Data Value	0 count	+1 count	…	+65533 counts	Invalid Data	Data Not Available

6.3.8 HOURS IN OPERATION

TABLE 105—DATA DEFINITION: HOURS IN OPERATION

Data Element			Description		
HOURS IN OPERATION			Number of total hours when the ignition switch has been at the ON position since the control unit was in first use.		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bytes	hour	1 hour	1 hour per bit	0 hour	+65533 hours
Format				*Note*	
SAE J1979 Table E36 – Unit and Scaling ID $24 Definition				65533 hours = 7 years 175 days 13 hours See Table A5 for an example.	

TABLE 106—SIGNAL VALUE DESCRIPTION

Signal Value	$0000	$0001	…	$FFFD	$FFFE	$FFFF
Data Value	0 hour	+1 hour	…	+65533 hours	Invalid Data	Data Not Available

6.3.9 LATITUDE

6.3.9.1 Latitude-Degree

TABLE 107—DATA DEFINITION

Data Element			Description		
LATITUDE-DEGREE			Latitude of the vehicle at the beginning of an event.		
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree	1 degree	1 degree per bit	+17 degrees	+71 degrees
Format				*Note*	
Electronic 2002 FARS Coding and Validation Manual Global Position: Latitude				This data should be used in combination with LATITUDE-MINUTE (6.3.9.2) and LATITUDE-SECOND (6.3.9.3). See Table A5 for an example.	

TABLE 108—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$3C	$5A	$FE	$FF
Data Value	0 degree	+1 degree	+60 degrees	+90 degrees	Invalid Data	Data Not Available

6.3.9.2 *Latitude-Minute*

TABLE 109—DATA DEFINITION

Data Element			Description		
LATITUDE-MINUTE		Latitude of the vehicle at the beginning of an event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Minute	1 minute	1 minute per bit	0 minute	+59 minutes
Format				*Note*	
Electronic 2002 FARS Coding and Validation Manual Global Position: Latitude				This data should be used in combination with LATITUDE-DEGREE (6.3.9.1) and LATITUDE-SECOND (6.3.9.3). See Table A5 for an example.	

TABLE 110—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$3B	$FE	$FF
Data Value	0 minute	+1 minute	+59 minutes	Invalid Data	Data Not Available

6.3.9.3 *Latitude-Second*

TABLE 111—DATA DEFINITION: LATITUDE

Data Element			Description		
LATITUDE-SECOND		Latitude of the vehicle at the beginning of an event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Second	0.01 second	0.01 second per bit	00.00 second	+59.99 seconds
Format				*Note*	
Electronic 2002 FARS Coding and Validation Manual Global Position: Latitude				This data should be used in combination with LATITUDE-DEGREE (6.3.9.1) and LATITUDE-MINUTE (6.3.9.2). See Table A5 for an example.	

TABLE 112—SIGNAL VALUE DESCRIPTION: SECOND

Signal Value	$00	$01	$176F	$FE	$FF
Data Value	0.00 second	0.01 second	59.99 seconds	Invalid Data	Data Not Available

6.3.10 LONGITUDE

6.3.10.1 Longitude-Degree

TABLE 113—DATA DEFINITION

Data Element			Description		
LONGITUDE-DEGREE		Longitude of the vehicle at the beginning of an event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree	1 degree	1 degree per bit	+65 degrees	+178 degrees
Format				*Note*	
Electronic 2002 FARS Coding and Validation Manual Global Position: Longitude				This data should be used in combination with LONGITUDE-MINUTE (6.3.10.2) and LONGITUDE-SECOND (6.3.10.3). See Table A5 for an example.	

TABLE 114—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$3C	$FD	$FE	$FF
Data Value	0 degree	+1 degree	+60 degrees	+253 degrees	Invalid Data	Data Not Available

6.3.10.2 Longitude-Minute

TABLE 115—DATA DEFINITION

Data Element			Description		
LONGITUDE-MINUTE		Longitude of the vehicle at the beginning of an event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Minute	1 minute	1 minute per bit	0 minute	+59 minutes
Format				*Note*	
Electronic 2002 FARS Coding and Validation Manual Global Position: Longitude				This data should be used in combination with LONGITUDE-DEGREE (6.3.10.1) and LONGITUDE-SECOND (6.3.10.3). See Table A5 for an example.	

TABLE 116—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$3C	$FE	$FF
Data Value	0 minute	+1 minute	+60 minutes	Invalid Data	Data Not Available

6.3.10.3 Longitude-Second

TABLE 117—DATA DEFINITION

Data Element			Description		
LONGITUDE-SECOND		Longitude of the vehicle at the beginning of an event.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Second	0.01 second	0.01 second per bit	00.00 second	+59.99 seconds
Format				*Note*	
Electronic 2002 FARS Coding and Validation Manual Global Position: Longitude				This data should be used in combination with LONGITUDE-DEGREE (6.3.10.1) and LONGITUDE-MINUTE (6.3.10.2). See Table A5 for an example.	

TABLE 118—SIGNAL VALUE DESCRIPTION: SECOND

Signal Value	$00	$01	$176F	$FE	$FF
Data Value	0.00 second	0.01 second	59.99 seconds	Invalid Data	Data Not Available

6.3.11 ACCIDENT DATE

6.3.11.1 Accident Date – Year

TABLE 119—DATA DEFINITION

Data Element			Description		
ACCIDENT DATE-YEAR		Year when the event occurred.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Year	1 year	1 year per bit	1900 A.D.	2153 A.D.
Format				*Note*	
Electronic 2002 FARS Coding and Validation Manual Month & Day: Accident Date				This data should be used in combination with ACCIDENT DATE-MONTH (6.3.11.2) and ACCIDENT DATE-DAY (6.3.11.3). See Table A5 for an example.	

TABLE 120—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$64	$FD	$FE	$FF
Data Value	1900 A.D.	1901 A.D.	2000 A.D.	2153 A.D.	Invalid Data	Data Not Available

6.3.11.2 Accident Date – Month

TABLE 121—DATA DEFINITION

Data Element			Description		
ACCIDENT DATE-MONTH		Month when the event occurred.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Month	1 month	1 month per bit	January	December
Format				*Note*	
Electronic 2002 FARS Coding and Validation Manual Month & Day: Accident Date				This data should be used in combination with ACCIDENT DATE-YEAR (6.3.11.1) and ACCIDENT DATE-DAY (6.3.11.3). See Table A5 for an example.	

TABLE 122—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$02	$0C	$FE	$FF
Data Value	-	January (1)	February (2)	December (12)	Invalid Data	Data Not Available

6.3.11.3 Accident Date – Day

TABLE 123—DATA DEFINITION

Data Element			Description		
ACCIDENT DATE-DAY		Date when the event occurred.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Day	1 day	1 day per bit	1st	31st
		Format			*Note*
Electronic 2002 FARS Coding and Validation Manual Month & Day: Accident Date				This data should be used in combination with ACCIDENT DAE-YEAR (6.3.11.1) and ACCIDENT DATE-MONTH (6.3.11.2). See Table A5 for an example.	

TABLE 124—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$02	$1F	$FE	$FF
Data Value	-	1st	2nd	31st	Invalid Data	Data Not Available

6.3.12 ACCIDENT TIME

6.3.12.1 Accident Time - Hour

TABLE 125—DATA DEFINITION

Data Element			Description		
ACCIDENT TIME-HOUR		Hours portion of the time of the day when the event occurred.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	O'clock	1 hour	1 hour per bit	0 O'clock	23 O'clock
		Format			*Note*
Electronic 2002 FARS Coding and Validation Manual Hour & Minute Accident Time				This data should be used in combination with ACCIDENT TIME-MINUTE (6.3.12.2) and ACCIDENT TIME-SECOND (6.3.12.3). See Table A5 for an example.	

TABLE 126—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$17	$FE	$FF
Data Value	0 O'clock	1 O'clock	23 O'clock	Invalid Data	Data Not Available

6.3.12.2 Accident Time - Minute

TABLE 127—DATA DEFINITION

Data Element			Description		
ACCIDENT TIME-MINUTE		Minutes portion of the time of the day when the event occurred.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Minute	1 minute	1 minute per bit	0 minute	+59 minutes
		Format			*Note*
Electronic 2002 FARS Coding and Validation Manual Hour & Minute Accident Time				This data should be used in combination with ACCIDENT TIME-HOUR (6.3.12.1) and ACCIDENT TIME-SECOND (6.3.12.3). See Table A5 for an example.	

TABLE 128—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$17	$3B	$FE	$FF
Data Value	0 minute	1 minute	23 minutes	59 minutes	Invalid Data	Data Not Available

6.3.12.3 Accident Time - Second

TABLE 129—DATA DEFINITION

Data Element		Description			
ACCIDENT TIME-SECOND		Second portion of the time of the day when the event occurred.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Second	1 Second	1 second per bit	0 second	+59 second
Format				*Note*	
Identical to ACCIDENT TIME-MINUTE (6.3.12.2)				This data should be used in combination with ACCIDENT TIME-HOUR (6.3.12.1) and ACCIDENT TIME-MINUTE (6.3.12.2). See Table A5 for an example.	

TABLE 130—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$17	$3B	$FE	$FF
Data Value	0 second	1 second	23 seconds	59 seconds	Invalid Data	Data Not Available

6.3.13 TEMPERATURE

6.3.13.1 Ambient Temperature

TABLE 131—DATA DEFINITION

Data Element		Description			
AMBIENT TEMPERATURE		Temperature measured at outside of the vehicle or the outer surface of the vehicle. The best estimate of the ambient air temperature by the vehicle system.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree in Celsius	1 degree	1degree per bit	- 40 degrees	+80 degrees
Format				*Note*	
				See Table A5 for an example.	

TABLE 132—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$28	$78	$FE	$FF
Data Value	-40 degrees	-39 degrees	0 degree	+80 degrees	Invalid Data	Data Not Available

6.3.13.2 Cabin Temperature

TABLE 133—DATA DEFINITION

Data Element		Description			
CABIN TEMPERATURE		Temperature measured inside of the vehicle cabin. If more than one cabin temperature data are available, use the data that was measured at the nearest point to the driver.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
1 byte	Degree in Celsius	1 degree	1degree per bit	- 40 degrees	+80 degrees
Format				*Note*	
Identical to AMBIENT TEMPERATURE (6.3.13.1)				See Table A5 for an example.	

TABLE 134—SIGNAL VALUE DESCRIPTION

Signal Value	$00	$01	$28	$78	$FE	$FF
Data Value	-40 degrees	-39 degrees	0 degree	+80 degrees	Invalid Data	Data Not Available

6.3.14 CRUISE CONTROL SYSTEM STATUS

TABLE 135—DATA DEFINITION

Data Element		Description			
CRUISE CONTROL SYSTEM STATUS		System status of the cruise control system			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	
				See Table A5 for an example.	

TABLE 136—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Cruise Control Engaged	No	Yes	Invalid Data	Data Not Available

6.3.15 DRIVER CONTROLS – STATIC

6.3.15.1 Parking Brake Switch Status

TABLE 137—DATA DEFINITION

Data Element		Description			
PARKING BRAKE SWITCH STATUS		PARKING BRAKE SWITCH STATUS indicates the status of the switch that is installed in or connected to the parking brake lever/pedal to detect whether or not the lever/pedal is at its parking position or not.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
Format				*Note*	
				See Table A5 for an example.	

TABLE 138—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Parking Brake Switch	Off (not On)	On	Invalid Data	Data Not Available

6.3.15.2 *Headlight Switch Status*

TABLE 139—DATA DEFINITION

Data Element		Description			
HEADLIGHT SWITCH STATUS		HEADLIGHT SWITCH STATUS indicates the status of the switch that is usually installed in the steering column or on the dash panel to detect driver's intention to activate front lighting system.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*
					See Table A5 for an example.

TABLE 140—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Headlight Switch	Off (not On)	On	Invalid Data	Data Not Available

6.3.15.3 *Front Wiper Switch Status*

TABLE 141—DATA DEFINITION

Data Element		Description			
FRONT WIPER SWITCH STATUS		FRONT WIPER SWITCH STATUS indicates the status of the switch that is usually installed in the steering column to detect the driver's intention to activate the front windshield wiper system.			
Data Length	*Unit*	*Resolution*	*Scaling*	*Minimum Value*	*Maximum Value*
2 bits	n.a.	n.a.	n.a.	n.a.	n.a.
		Format			*Note*
					See Table A5 for an example.

TABLE 142—SIGNAL VALUE DESCRIPTION

Signal Value	$0	$1	$2	$3
Front Wiper Switch	Off (not On)	On	Invalid Data	Data Not Available