

On-scene Investigation / Vehicle to Vehicle
Dynamic Science, Inc. / Case Number: DS99014
1998 Oldsmobile Intrigue
California
January, 1999

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics 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 Documentation Page

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16. Abstract <p>This event occurred in January, 1999. Vehicle 1, a 1998 Oldsmobile Intrigue, was being driven by a properly restrained 41-year-old male (178 cm/70 in., 73 kg/162 lbs. The case vehicle was equipped with Oldsmobile's standard "Next Generation Dual Frontal Air Bags", introduced in the 1998 model year. The vehicle is part of a rental fleet. The front right seat was occupied by a restrained 6-year-old male (122 cm/48 in., 24 kg/52 lbs). There were three additional occupants in the rear seat.</p> <p>The case vehicle was driving southbound on a multi-lane divided interstate roadway. The roadway at this point is comprised of six travel lanes and a single High Occupancy Vehicle (HOV) lane. Vehicle 1 was in the lane adjacent to the HOV lane and was preparing to move into that lane. Traffic was light and the weather was fair. At some point before moving into the HOV lane, both the driver's side and passenger side frontal air bags apparently deployed without an accompanying crash event. The driver reported that he sustained a contusion to the left arm from the deploying air bag. The front right occupant did not report any injuries, but did complain of pain in his ears. All occupants also complained of sore throats, presumably from the smoke. The event was not investigated by any police agency.</p> <p>An in-depth inspection of the vehicle exterior—and in particular the undercarriage—was conducted. While there are several minor scrapes to the undercarriage, there is no indication of any impact-related damage which may have caused the deployments. A GM representative attached the diagnostic tool and downloaded the data from the System Diagnostic Module (SDM). Three copies of the data were printed out. On August 3, 1999, the GM representative reported on the interpretation of the codes. The bottom line is that the engineers do not know why the air bags deployed inadvertently. There was no indication of an above-threshold event. The highest delta v recorded was 2.7 km/h (1.7 mph). They report the deployment as essentially a mystery.</p>			
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Dynamic Science, Inc.
Accident Investigation
Case Number: DS99014

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BACKGROUND:

Description: This case was initiated in response to a report of an inadvertent air bag deployment. This case is being conducted as an on-scene investigation. NHTSA was notified by the driver of the case vehicle.

Investigation Type: On-scene

Crash Location: California

Crash Date: January 1999

Notification Date: January 29, 1999.

Field Work Completed: February 17, 1999

SUMMARY:

This event occurred in January, 1999. Vehicle 1, a 1998 Oldsmobile Intrigue, was being driven by a properly restrained 41-year-old male (178 cm/70 in., 73 kg/162 lbs). The case vehicle was equipped with Oldsmobile's standard "Next Generation Dual Frontal Air Bags", introduced in the 1998 model year. The vehicle is part of a rental fleet. The front right seat was occupied by a restrained 6-year-old male (122 cm/48 in., 24 kg/52 lbs). There were three additional occupants in the rear seat.

The case vehicle was driving southbound on a multi-lane divided interstate roadway. The roadway at this point is comprised of six travel lanes and a single High Occupancy Vehicle (HOV) lane. Vehicle 1 was in the lane adjacent to the HOV lane and was preparing to move into that lane. Traffic was light and the weather was fair. At some point before moving into the HOV lane, both the driver's and passenger's frontal air bags apparently deployed without an accompanying crash event.



Figure 1. General travel path.

The driver reported that he sustained a contusion to the left arm from the deploying air bag. The front right occupant did not report any injuries, but did complain of pain in his ears. All occupants also complained of sore throats, presumably from the smoke.

The event was not investigated by any police agency.

The case vehicle was located and inspected it on February 17, 1999. Prior to the inspection, the vehicle had been towed from the scene of the deployment event by the rental company. Shortly after its arrival, it was taken to a local dealership, but prior to any repair work being done it was returned back to the rental agency. Since that time it was held in secure storage by the rental company. A legal hold was placed on the vehicle by the driver's attorney for several months. This hold has been removed.

An in-depth inspection of the vehicle exterior—and in particular the undercarriage—was conducted. While there are several minor scrapes to the undercarriage, there is no indication of any impact-related damage which may have caused the deployments.

A GM representative attached the diagnostic tool and downloaded the data from the SDM¹. Three copies of the data were printed out. On August 3, 1999, the GM representative reported on the interpretation of the codes. The bottom line is that the engineers do not know why the air bags deployed inadvertently. There was no indication of an above-threshold event. The highest delta v recorded was 2.7 km/h (1.7 mph). They report the deployment as essentially a mystery.



Figure 2. Exterior, Vehicle 1



Figure 3. Driver air bag.

¹See Attachment 1

During the interior inspection, it was determined that there was a problem with the passenger side frontal air bag. The air bag had not fully deployed. Some mechanism had restricted the air bag's movement. The air bag was unfurled in a step by step fashion. Further investigation revealed that the air bag (in the area near the middle and right side seams) had been heat-fused to a piece of plastic that is approximately 2.5 x 15.2 cm (1 x 6 in.). The air bag had melted and burned in this area. The piece of plastic has several rivets in it. Its origin or purpose is not known.

The module was not removed at the time of the inspection since this investigator had assured the driver's attorney that no components would be removed.



Figure 4. Interior, Vehicle 1. Shows passenger side air bag as found during inspection.

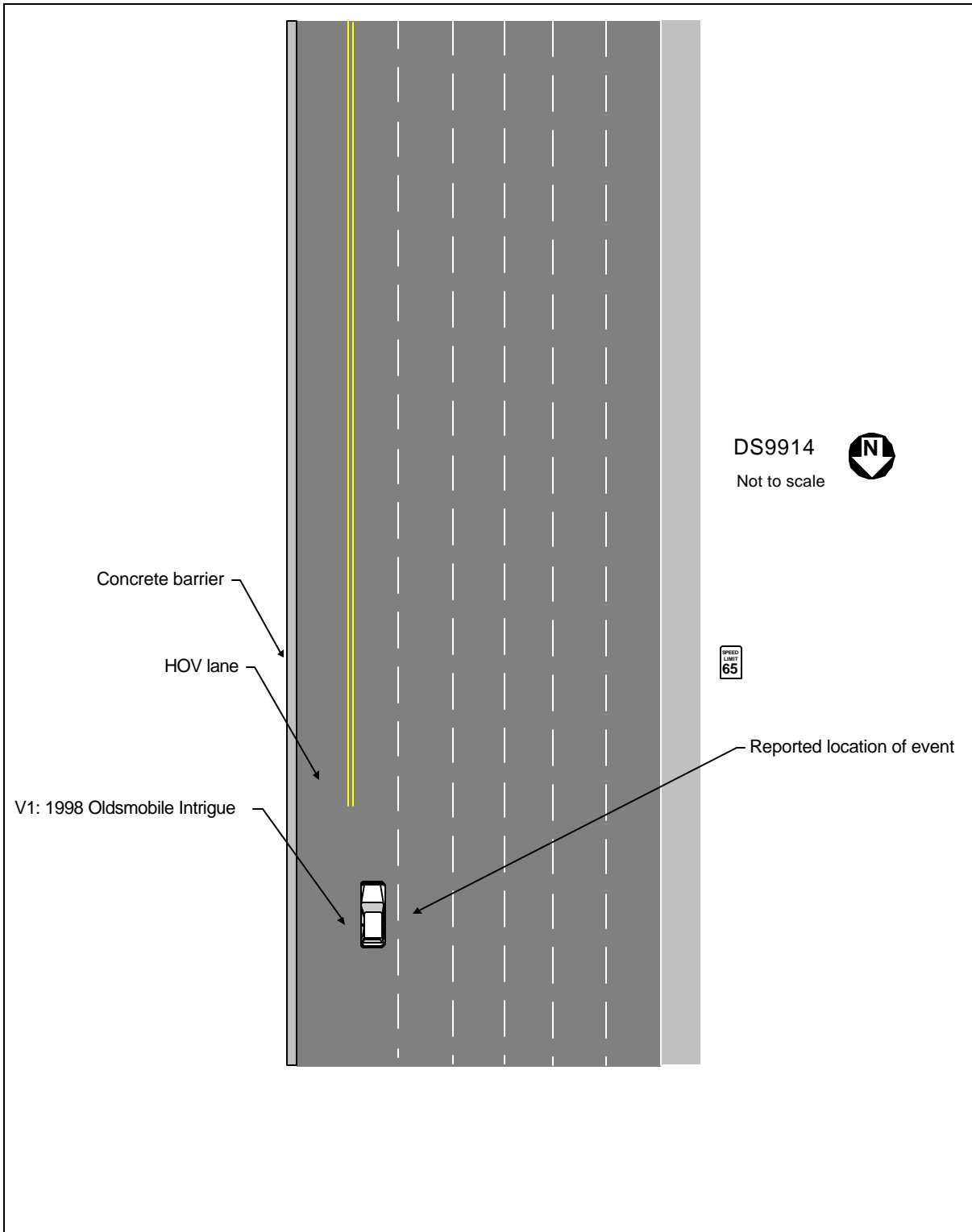


Figure 5. Passenger side air bag.



Figure 6. Passenger air bag. Shows exterior of air bag first, then the melted pieces of plastic found on the inside.

Scene Diagram



DETAILED INFORMATION**Vehicles**Vehicle 1

Description:	1998 Oldsmobile Intrigue 4 door sedan	
VIN:	1G3WH52K0WFXXXXXX	
Odometer:	27,444 km (17,053 miles)	
Engine:	3.8 L V6	
Reported Defects:	None reported	
Cargo:	None	
Damage Description:	Minor scrapes to the undercarriage, but there was no indication of any impact-related damage which may have caused the deployments	
CDC:	NA	
Delta V:	Total	NA
	Longitudinal	NA
	Latitudinal	NA
	Energy	NA

Occupants

<u>Vehicle 1</u>	Occupant 1	Occupant 2
Age/Sex:	41/Male	6/Male
Seated Position:	Front left	Front right
Seat Type:	Bucket	Bucket
Height:	178 cm (70 in.)	122 cm (48 in.)
Weight:	73 kg (162 lbs.)	24 kg (52 lbs.)
Occupation:	Unknown	NA
Pre-existing Medical Condition:	None noted	None noted
Alcohol/Drug Involvement:	None	NA
Driving Experience:	Unknown	NA
Body Posture:	Normal, upright	Normal, upright
Hand Position:	Both hands on wheel	Unknown
Foot Position:	Right foot on accelerator, left on floor	Unknown
Restraint Usage:	Lap and shoulder belt used ²	Lap and shoulder belt used
Air bag:	Deployed	Partially deployed

²Verified by SDM printout

Vehicle 1

Age/Sex:	36/Female	Unk/Male child	8/Female
Seated Position:	Unknown, rear seat	Unknown, rear seat	Unknown, rear seat
Seat Type:	Bench	Bench	Bench
Height:	Unknown	Unknown	Unknown
Weight:	Unknown	Unknown	Unknown
Occupation:	Unknown	Unknown	
Pre-existing Medical Condition:	None noted	None noted	None noted
Alcohol/Drug Involvement:	NA	NA	NA
Driving Experience:	NA	NA	NA
Body Posture:	Unknown	Unknown	Unknown
Hand Position:	Unknown	Unknown	Unknown
Foot Position:	Unknown	Unknown	Unknown
Restraint Usage:	Unknown	Unknown	Unknown
Air bag:	None available	None available	None available

Injuries and Injury Mechanisms

Vehicle 1

	<u>INJURY</u>	<u>OIC CODE</u>	<u>ICD-9</u>	<u>SOURCE</u>
Driver:	Contusion, left arm	790402.1,2	923.10	Air bag
RF Occupant:	Not injured			
Occupant (03):	Not injured			
Occupant (04):	Not injured			
Occupant (05):	Not injured			

Occupant Kinematics


The driver of Vehicle 1 was seated in a normal, upright position. Both hands were on the steering wheel. His right foot was on the accelerator, his left on the floor. He was wearing the available lap and shoulder belt. The D-ring was in the full up position. There was 55 cm longitudinally between the face of the steering wheel module and the front of the front seat. There was no known precipitating event which caused the deployment so the driver was still in his normal, relaxed position as the air bag deployed. As the air bag deployed, it contacted the inner part of the driver's left arm—causing a contusion. He was not aware if his hand ever came off the steering wheel.

Insofar as the other occupants are concerned, there were no related kinematics nor any air bag contact. The air bag for the passenger side did not deploy to any degree where it might have come into contact with the belted occupant.

Attachment 1. SDM printout

SIR SIR EEPROM DATA

Write in DATE: 2/17/99 *AB*

Write in VIN: 1G3WH52K0WF 

RDM identification: 00

```

0600: 10 40 44 00 04 00 00 00
0605: AA 00 00 00 00 00 00 00
0610: AA 00 00 00 00 07 F9 F9
0615: F9 F9 F9 F9 F9 00 FF 00
0620: AA AA 00 00 00 00 00 7D
0625: 00 00 40 09 00 07 07 07
0630: 07 00 07 07 07 06 07 07
0635: 06 06 06 06 06 06 05 05
0640: 05 05 05 05 05 05 05 05
0645: 05 05 06 C0 0F 00 00 FF
0650: 00 05 05 05 0A 0A 01 00
0655: 00 00 00 00 00 00 00 00
0660: 00 00 00 00 00 00 00 00
0665: 00 00 00 00 00 00 00 00
0670: 00 00 00 00 00 00 00 00
0675: 00 00 00 00 00 00 00 00
0680: 00 00 00 00 00 00 00 00
0685: 00 00 02 A3 96 00 02 04
0690: 97 00 02 A0 98 00 00 00
0695: 00 00 02 93 92 00 02 94
06A0: 93 00 02 94 94 00 02 A1
06A5: 95 00 00 00 00 00 00 00
06B0: 00 00 00 00 00 00 00 00
06B5: 00 00 00 00 00 92 6E C6
06C0: 34 4E 1A 01 00 64 02 AA
06C5: 00 AA 00 00 00 00 01 01
06D0: 0E 0E 0C 07 0E 01 0E 0C
06D5: 60 EE 04 07 ED 00 00 00
06E0: 00 00 FF FF 00 00 02 57
06E5: 12 00 00 00 00 00 00 00
06F0: 20 00 F0 05 50 06 0C 23
06F5: 64 FF FF FF FF FF FF FF
0700: 52 52 52 53 5A 5D 5D 7F
0705: 04 06 09 0A 0F 94 9A 00
0710: A7 AE 85 8A 8F C7 01 DA
0715: C2 ED F8 41 43 46 48 4A
0720: 4C 4E 51 53 56 58 5A 5C
0725: 5E 60 62 64 65 66 68 69
0730: 68 6C 6D 6E 6F 70 71 72
0735: 72 73 74 74 75 75 75 76
0740: 76 76 77 77 77 77 77 77
0745: 77 77 77 77 77 77 77 77
0750: 77 77 77 77 77 77 77 77
0755: 77 77 77 77 77 00 18 00
0760: 20 14 28 50 2C 10 0E 0A
0765: 20 AA 00 50 51 FF FF FF
0770: FF FF FF FF 4A 4A 4A 4A
0775: 4F 51 51 51 51 51 51 51
0780: 51 54 56 57 59 5D 5F 61
0785: 63 63 63 65 65 65 65 65
0790: 65 65 65 65 65 65 65 65
0795: 65 65 65 65 65 65 65 65
0800: 65 65 65 65 65 65 65 65
0805: 65 65 65 65 65 65 65 65
0810: 65 65 65 65 65 00 00 00
0815: 00 00 01 61 00 00 00 00
0820: 00 00 00 00 00 00 00 00
0825: 00 00 00 00 00 00 00 00

```

TECH 1 DATA LIST

1. PSIR1	LOW
2. PSIR2	LOW
3. PASS SUPP DEF	DISABLED
4. DPSIR	OFF
5. IGNITION	11.8 V
6. ACCST	- 1 B
7. DRIV. SENSELO	0.1 V
8. PASS. SENSELO	0.2 V
9. DRESF	22.7 V
10. PRESF	23.0 V
11. DRIVER VOIF	0.476 V
12. PASS. VOIF	0.007 V
13. DRIVER RESIST.	0.0 OHMS
14. PASS. RESIST.	0.0 OHMS
15. RAK DOWNLOAD	DISABLED
16. CLEAR CRASH DATA	DISABLED
17. DSBFB	ACTIVE
18. DRIVER SEATBELT	BUCKLED
19. LAMPFBX	ACTIVE
20. LAMP DRIVER	INTERNAL
21. WARNING LAMP ON	ON 2.0 HOURS
22. WARNING LAMP	ON 25 CYCLES
23. ADS STATUS	NOT EXPECTED
24. LPS STATUS	NOT EXPECTED
25. ASCI	OVERLAP
26. SINK 100	SINK OFF
27. AUXINFB	
28. SFAULT	ADS/LPS FAULT
29. DSEF	INACTIVE
30. PSLF	INACTIVE
31. TXEN	ACTIVE
32. TEST	INACTIVE
33. D/P	PASS SIDE
34. SYSTEM TYPE	D/P SYSTEM
35. TXD	ACTIVE
36. RXD	INACTIVE
37. WARM	COMMAND ON
38. RMEAS	2 mA ON
39. FETEN	INACTIVE
40. TEST	INACTIVE
41. RDM ID	\$05
42. SDM ID	\$50
43. PLATFORM ID	W CAR
44. CAL ID	\$12
45. ENRD*	ENABLED
46. CLOCK	OFF

