

U.S. Department of Transportation

National Highway Traffic Safety Administration

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TRANSPORTATION SCIENCES CENTER ACCIDENT RESEARCH GROUP

Division of Calspan Corporation

CALSPAN REMOTE AIR BAG DEPLOYMENT INVESTIGATION CALSPAN CASE NO. 93-18 VEHICLE, 1992 DODGE SHADOW

VEHICLE: 1993 DODGE SHADOW LOCATION: , NY DATE: 1993

Contract No. DTNH22-94-A-07047

Prepared for:

U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D.C. 20590

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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

1. Report No. 2 93-18	2. Government Accession No.	3.	3. Recipient's Catalog No.					
4. Title and Subtitle Calspan Remote Air Bag Deploy	yment Investigation	5. Report Date: 1995						
Vehicle - 1993 Dodge Shadow Location NY		6. Performing Organization Code						
7. Author(s) Accident Research Group		8. Performing Organization Report No.						
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Division of Calspan Corporation	n	11. Contract or Grant No. DTNH22-94-A-07047						
12. Sponsoring Agency Name and Agency Name and Agency U.S. Department of Transportational Highway Traffic Safety Washington, D.C. 20590	tion	13. Type of Report and Period Covered Technical Report Accident Date 93						
		14. Sponsoring Agency Code						
15. Supplementary Notes Remote investigation of an air b	Remote investigation of an air bag deployment crash that resulted in minor severity eye injuries to the belted 28 year old male							
chain reaction type crash. The single lane. The Dodge Shadow Blazer. This frontal impact sequence of the side of t	This remote air bag deployment investigation focused on a 1993 Dodge Shadow that was involved in a four vehicle front-to-rear chain reaction type crash. The crash occurred on a state route near a three-leg T intersection in an area where traffic merges into a single lane. The Dodge Shadow was initially struck in the rear by a 1988 Ford and was accelerated into the rear of a Chevrolet Blazer. This frontal impact sequence resulted in a sufficient longitudinal deceleration which deployed the Shadow's supplemental							
system. In response to the from with his face. This contact sequ	The driver of the Dodge Shadow was a 28 year old male. He was reportedly belted by the manual 3-point lap and shoulder belt system. In response to the frontal impact sequence, the driver initiated a forward trajectory and contacted the deploying air bag with his face. This contact sequence resulted in bilateral corneal abrasions (AIS-1). He was transported to a local hospital where he was treated for the injuries and released. He did not sustain long term visual impairment.							
	Inputs for this remote investigation were obtained from a brief interview with the driver of the Dodge Shadow, an interview with the investigating police officer, and from data contained in the police accident report which is included as Attachment A.							
17. Key Words Remote Investigation Supplemental Restraint System Four vehicle front-to-rear impact AIS-1 level injuries		18. Distribut General	ion Statement Public					
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this Unclassified	page)	21. No. of Pages 21	22. Price				

CALSPAN REMOTE AIR BAG DEPLOYMENT INVESTIGATION CALSPAN CASE NO. 93-18 VEHICLE: 1993 DODGE SHADOW LOCATION:

SUMMARY

This remote investigation focused on a four vehicle chain reaction front-to-rear crash sequence that involved a 1993 Dodge Shadow equipped with a supplemental driver's side air bag system. The Dodge Shadow slowed for traffic and was struck in the rear by a 1988 Ford station wagon. The impact accelerated the Shadow forward into the rear of a 1988 Chevrolet Blazer which subsequently struck the lead vehicle, a farm tractor hauling an agricultural trailer. The Dodge Shadow's frontal impact sequence resulted in a sufficient longitudinal deceleration which deployed the driver's side air bag system. The 28 year old male driver of the Dodge Shadow was reportedly wearing the manual 3-point lap and shoulder belt system. He sustained bilateral corneal abrasions (AIS-1) from his involvement with the deploying air bag.

The crash occurred on a two lane state route near a three-leg T intersection in the Town of NY, on 1993, during daylight hours. In the vicinity of the intersection, the state route widened to three lanes with two in the eastbound direction to facilitate eastbound traffic around vehicles turning left at the intersection. The state route was curved to the right with respect to eastbound traffic and had a moderate negative grade. At the time of the crash, the asphalt road surface was wet due to rain. The posted speed limit was 89 km/h (55 mph).

The 1993 Dodge Shadow, 4 dr. hatchback, was equipped with a Supplemental Restraint System (SRS) that consisted of a driver's side air bag system. In addition to the air bag, the vehicle was equipped with manual 3-point lap and shoulder belts at the four outboard seated positions, and a center rear lap belt. The vehicle was identified by the following vehicle identification number (VIN): 1B3XP28D9PN. The Dodge reportedly sustained minor rear damage that was distributed across the full width of the vehicle and moderate frontal damage which involved the right and center zones of the frontal area. Due to damage to both end planes, the Dodge Shadow was deemed a total loss by the insurance company.

The farm tractor was traveling in an easterly direction on the state route at a slow rate of speed. The investigating State Trooper noted that the driver of the tractor stayed in the right lane to allow eastbound traffic to pass on the inboard travel lane in the area of the intersection. As the tractor passed the area of the intersection, the right lane ended, therefore the tractor had to merge to the left into the single eastbound travel lane. The driver of the 1988 Chevrolet Blazer was traveling eastbound and began to pass the tractor as it merged to the left. The driver of the Blazer slowed his vehicle to allow the tractor to merge into the eastbound lane. The Dodge Shadow was traveling behind the Chevrolet Blazer and decelerated for the lead vehicles. The driver of vehicle #4, the 1988 Ford station wagon, was also traveling eastbound and apparently failed to detect the brake lights of the Dodge Shadow in sufficient time to safely decelerate his vehicle. The driver of the Ford braked and skidded on the wet road surface as it continued forward into the rear of the Dodge Shadow.

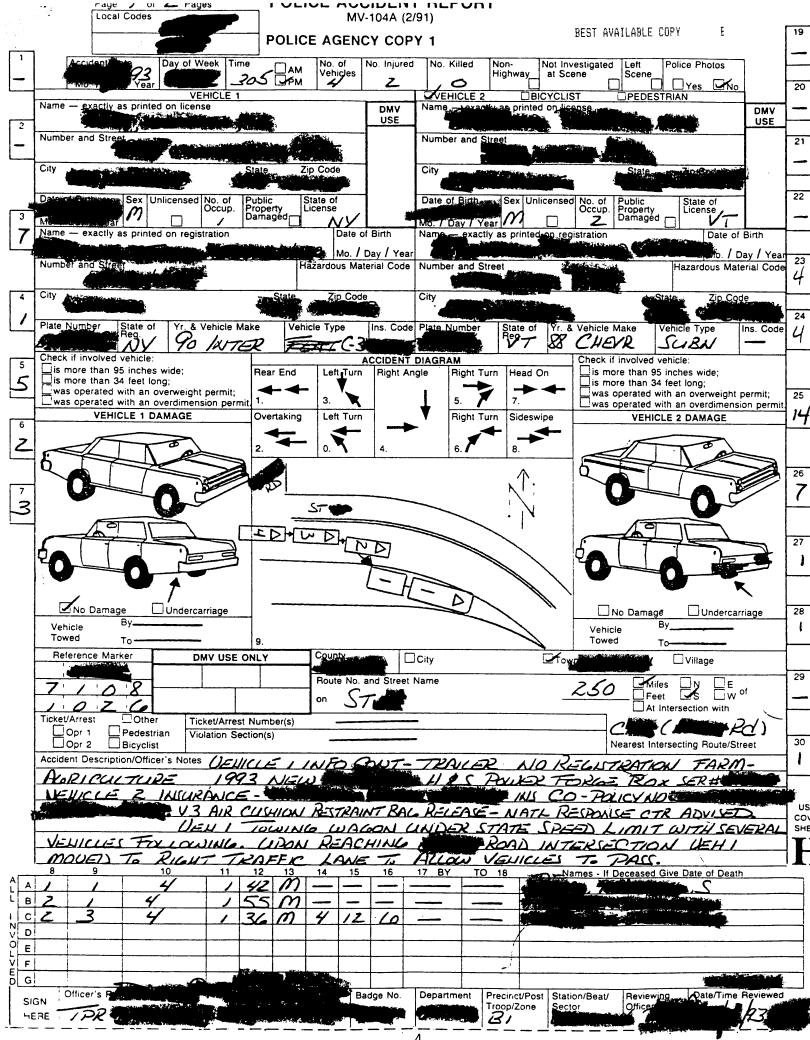
The full frontal area of the Ford station wagon impacted the rear of the Dodge Shadow in a 12 o'clock/ 6 o'clock impact configuration. The impact accelerated the Dodge Shadow forward into the rear of the Chevrolet Blazer which resulted in a slightly offset front-to-rear impact configuration. The right and center frontal area of the Shadow impacted and partially underrode the rear of the Blazer which resulted in damage to the bumper and grille levels of the vehicle. The 12 o'clock impact configuration resulted in a sufficient longitudinal deceleration which deployed the Shadow's driver air bag system. The Blazer was displaced forward by the crash and subsequently sideswiped the left rear corner of the farm implement with the right side surface of the Blazer.

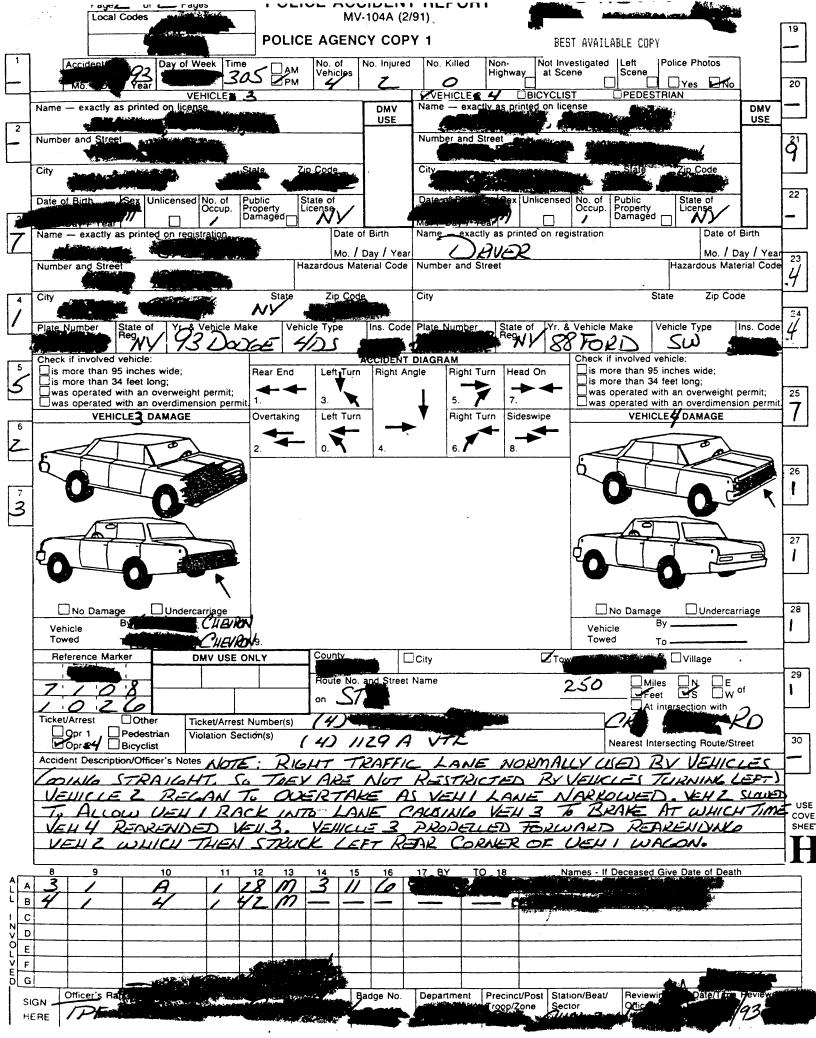
The driver of the Dodge Shadow was a 28 year old male. He was reportedly wearing the manual 3-point lap and shoulder belt system. In response to the initial impact with the Ford station wagon, the driver was probably thrust rearward with respect the his accelerated vehicle. He subsequently initiated a forward trajectory as his vehicle impacted the rear of the Chevrolet Blazer. His face contacted the deployed driver's side air bag system which resulted in bilateral corneal abrasions. Although the air bag caused minor severity injuries to the eyes, the combination of the air bag and manual belt system probably protected the driver from additional injuries.

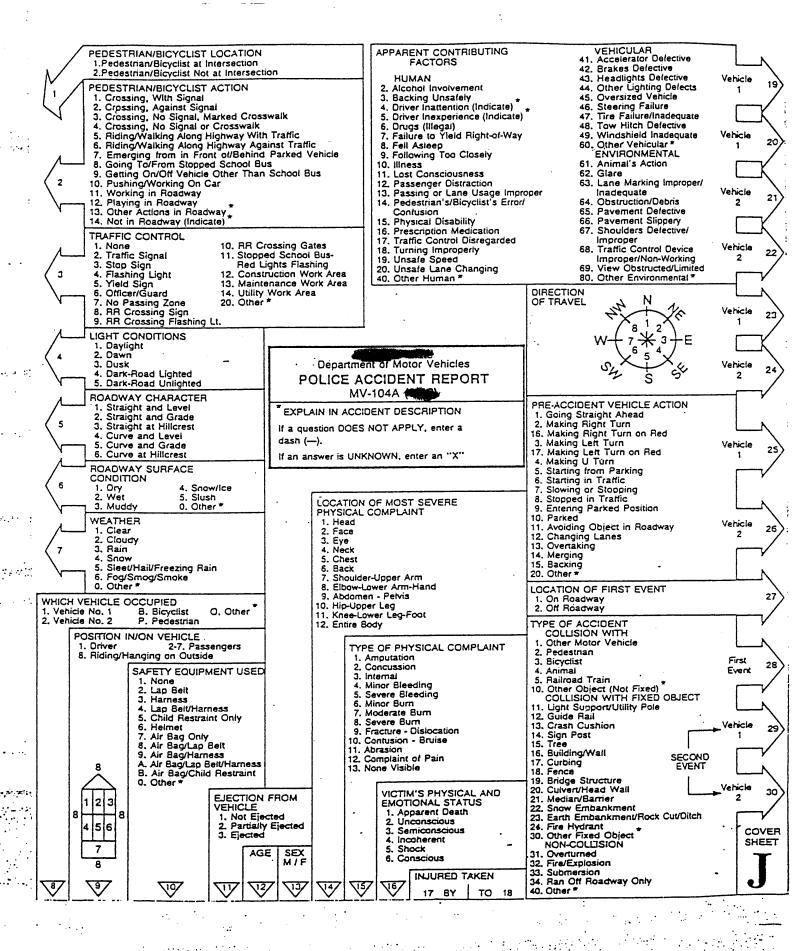
The driver of the Dodge Shadow was transported by ambulance to a local hospital where he was treated for his injuries and released. He reportedly did not experience long term visual impairment from the corneal abrasions. The driver of the Chevrolet Blazer complained of neck pain, however, he did not require medical treatment. The drivers of the farm tractor and the Ford station wagon were not injured.

ATTACHMENT A

Police Accident Report







rang dan pagkaran Pagarang bangangga aranggapan darah dan pada dan bangga dan pada pada pada pagaran dan mari

ATTACHMENT B

NASS Occupant Forms



U.S. Department of Transportation

OCCUPANT ASSESSMENT FORM

Form Approved O.M.B. No. 2127-0021

NATIONAL ACCIDENT SAMPLING SYSTEM CRASHWORTHINESS DATA SYSTEM

National Highway Traffic Safety
Administration

4. Deimann Canadian Hait Nearban	OCCUPANT'S SEATING
1. Primary Sampling Unit Number 2. Case Number Stratum 93-18	10. Occupant's Seat Position
	Front Seat (11) Left side
3. Vehicle Number <u>0 3</u>	(12) Middle
4. Occupant Number O I	(13) Right side (14) Other (specify):
OCCUPANT'S CHARACTERISTICS	(15) On or in the lap of another occupant
5. Occupant's Age Code actual age at time of accident. (00) Less than one year old (specify by month): (97) 97 years and older (99) Unknown	Second Seat (21) Left side (22) Middle (23) Right side (24) Other (specify): (25) On or in the lap of another occupant
6. Occupant's Sex (1) Male (2) Female-not reported pregnant (3) Female-pregnant-1st trimester(1st-3rd month) (4) Female-pregnant-2nd trimester(4th-6th month) (5) Female-pregnant-3rd trimester(7th-9th month) (6) Female-pregnant-term unknown (9) Unknown 7. Occupant's Height Code actual height to the nearest centimeter. (999) Unknown	Third Seat (31) Left side (32) Middle (33) Right side (34) Other (specify): (35) On or in the lap of another occupant Fourth Seat (41) Left side (42) Middle (43) Right side (44) Other (specify): (45) On or in the lap of another occupant (97) In or on unenclosed area (98) Other seat (specify): (99) Unknown
<pre>inches X 2.54 =centimeters 8. Occupant's Weight</pre>	11. Occupant's Posture (0) Normal posture Abnormal posture (1) Kneeling or standing on seat (2) Lying on or across seat (3) Kneeling, standing or sitting in front of seat (4) Sitting sideways or turned to talk with another occupant or to look out a rear window (5) Sitting on a console (6) Lying back in a reclined seat position (7) Bracing with feet or hands on a surface in front of seat (8) Other abnormal posture (specify): (9) Unknown
•	8

		EJE	CTION/E	NTRAPMENT
12.	(O) (1) (2) (3)	ction No ejection Complete ejection Partial ejection Ejection, unknown degree Unknown	. 0	15. Medium Status (Immediately Prior To Impact) O (0) No ejection (1) Open (2) Closed (3) Integral structure (9) Unknown
13.	(O) (1) (2) (3) (4) (5) (6) (7) (8)	No ejection No ejection Windshield Left front Right front Left rear Right rear Rear Roof Other area (e.g., back of pickup, etc.) (specify): Unknown	0	16. Entrapment (0) Not entrapped/exit not inhibited (1) Entrapped/pinned - mechanically restrained (2) Could not exit vehicle due to jammed doors, fire, etc. (specify): (9) Unknown 17. Occupant Mobility (0) Occupant fatal before removed from vehicle (1) Removed from vehicle while unconscious or disoriented
14.	(0) (1) (2) (3) (4)	No ejection No ejection Door/hatch/tailgate Nonfixed roof structure Fixed glazing Nonfixed glazing (specify): Integral structure	<u>o</u>	 (2) Removed from vehicle due to injuries (3) Exited vehicle with some assistance (4) Exited vehicle under own power (5) Occupant fully ejected (9) Unknown
		Other medium (specify):		
	(9)	Unknown		
				·
Į.				

-	BELT SYSTEM	M FUNCTION
18.	Manual (Active) Belt System Availability (0) None available (1) Belt removed/destroyed (2) Shoulder belt (3) Lap belt (4) Lap and shoulder belt (5) Belt available—type unknown Integral Belt Partially Destroyed (6) Shoulder belt (lap belt destroyed/removed) (7) Lap belt (shoulder belt destroyed/removed) (8) Other belt (specify):	22. Shoulder Belt Upper Anchorage Adjustment (0) No shoulder belt (1) No upper anchorage adjustment for shoulder belt Adjustable shoulder Belt Upper Anchorage (2) In full up position (3) In mid position (4) In full down position (5) Position unknown (9) Unknown if position has adjustable upper anchorage adjustment
19.	(9) Unknown Manual (Active) Belt System Use (00) None used, not available, or belt removed/destroyed (01) Inoperative (specify): (02) Shoulder belt (03) Lap belt (04) Lap and shoulder belt (05) Belt used—type unknown (08) Other belt used (specify): (12) Shoulder belt used with child safety seat (13) Lap belt used with child safety seat (14) Lap and shoulder belt used with child safety seat (15) Belt used with child safety seat—type unknown (18) Other belt used with child safety seat (specify): (99) Unknown if belt used	23. Automatic (Passive) Belt System Availability/ Function (0) Not equipped/not available (1) 2 point automatic belts (2) 3 point automatic belts (3) Automatic belts - type unknown Non-functional (4) Automatic belts destroyed or rendered inoperative (9) Unknown 24. Automatic (Passive) Belt System Use (0) Not equipped/not available/destroyed or rendered inoperative (1) Automatic belt in use (2) Automatic belt in use (manually disconnected, motorized track inoperative) (specify): (3) Automatic belt use unknown (9) Unknown 25. Automatic (Passive) Belt System Type (0) Not equipped/not available
20.	Proper Use of Manual (Active) Belts (0) None used or not available (1) Belt used properly (2) Belt used properly with child safety seat Belt Used Improperly (3) Shoulder belt worn under arm (4) Shoulder belt worn behind back or seat (5) Belt worn around more than one person (6) Lap belt worn on abdomen (7) Lap belt or lap and shoulder belt used improperly with child safety seat (specify): (8) Other improper use of manual belt system (specify):	(1) Non-motorized system (2) Motorized system (9) Unknown 26. Proper Use of Automatic (Passive) Belt System (0) Not equipped/not available/not used (1) Automatic belt used properly (2) Automatic belt used properly with child safety seat Automatic Belt Used Improperly (3) Automatic shoulder belt worn under arm (4) Automatic shoulder belt worn behind back (5) Automatic belt worn around more than one person (6) Lap portion of automatic belt worn on abdomen (7) Automatic lap and shoulder belt or automatic shoulder belt used improperly
21.	Manual (Active) Belt Failure Modes During Accident (0) No manual belt used or not available (1) No manual belt failure(s) (2) Torn webbing (stretched webbing not included) (3) Broken buckle or latchplate (4) Upper anchorage separated (5) Other anchorage separated (specify): (6) Broken retractor (7) Combination of above (specify): (8) Other manual belt failure (specify):	with child safety seat (specify): (8) Other improper use of automatic belt system (specify): (9) Unknown 27. Automatic (Passive) Belt Failure Modes During Accident (0) Not equipped/not available/not in use (1) No automatic belt failure(s) (2) Torn webbing (stretched webbing not included) (3) Broken buckle or latchplate (4) Upper anchorage separated (5) Other anchorage separated (specify): (6) Broken retractor (7) Combination of above (specify): (8) Other automatic belt failure (specify):

POLICE REPORTED RESTRAINT US	SE	AIR BAG SYSTEM FUNCTION
28. Police Reported Belt Use (0) None used (1) Police did not indicate belt use (2) Shoulder belt (3) Lap belt (4) Lap and shoulder belt (5) Belt used, type not specified (6) Child safety seat (7) Automatic belt (8) Other type belt, (specify):	4	30. Frontal Air Bag System Availability/Function (This Occupant Position) (0) Not equipped/not available (1) Air bag Non-functional (2) Air bag disconnected (specify): (3) Air bag not reinstalled (9) Unknown
 (9) Police indicated "unknown" 29. Police Reported Air Bag Availability/Function (0) No air bag available (1) Police did not indicate air bag availability/function (2) Deployed (3) Not deployed (4) Unknown if deployed (9) Police indicated "unknown" 	on <u>2</u>	 Frontal Air Bag System Deployment (This Occupant Position) (0) Not equipped/not available (1) Deployed during accident (as a result of impact) (2) Deployed inadvertently just prior to accident (3) Deployed, details unknown (4) Deployed as a result of a noncollision event during accident sequence (e.g., fire, explosion, electrical) (5) Unknown if deployed (7) Nondeployed (9) Unknown
Check the Primary Source Used In Determing Belt Use. [] Not equipped/not available/destroyed or rendered inoperative [] Vehicle inspection [] Official injury data [] Driver/occupant interview [] Other (specify): [] Unknown if belt used	ning	Availability/Function (This Occupant Position) (0) Not equipped/not available (1) Air bag Non-functional (2) Air bag disconnected (specify): (3) Air bag not reinstalled (9) Unknown Specify type of "other" air bag present:
		33. Air Bag(s) Deployment, Other Than First Seat Frontal (This Occupant Position) (0) Not equipped with an "other" air bag (1) Deployed during accident (as a result of impact) (2) Deployed inadvertently just prior to accident (3) Deployed, details unknown (4) Deployed as a result of a noncollision event during accident sequence (e.g., fire, explosion, electrical) (5) Unknown if deployed (7) Nondeployed (9) Unknown
		Failure? (This Occupant Position) (0) Not equipped/not available (1) No (2) Yes (specify):

FIRST SEAT FRONTAL AIR	BAG SYSTEM EVALUATION
35. Had Vehicle Been in Previous Accident(s)? (0) Not equipped/not available (1) No previous accidents Yes (2) Previous accident(s) without deployment(s) (3) One previous accident with deployment (4) More than one previous accident with at least one deployment (8) Previous accidents, unknown deployment status (9) Unknown	40. Longitudinal Component of Delta V For Air Bag Deployment Impact (_000) Not equipped/not available Code the value of the delta V for the impact that initiated the air bag deployment (_996) Deployment, unknown longitudinal Delta V (_997) Not deployed (_998) Unknown if deployed (_999) Unknown
36. Type of Air Bag (0) Not equipped/not available (1) Original manufacturer installed system (2) Retrofitted air bag (3) Replacement air bag (8) Unknown type of air bag (9) Unknown	41. Did Air Bag Module Cover Flap(s) Open At Designated Tear Points? (0) Not equipped/not available (1) No (2) Yes (3) Deployed, unknown if flap(s) opened at designated tear points (7) Not deployed (8) Unknown if deployed
37. Had Any Prior Maintenance/Service Been Performed On This Air Bag System? (0) Not equipped/not available (1) No prior maintenance (2) Yes, prior maintenance (specify): (9) Unknown 38. Air Bag Deployment Accident Event Sequence Number	(9) Unknown 42. Were Air Bag Module Cover Flap(s) Damaged? 9 (0) Not equipped/not available (1) No (2) Yes (specify): (3) Deployed, unknown if air bag module cover flap(s) damaged (7) Not deployed (8) Unknown if deployed (9) Unknown
(OO) Not equipped/not available Code the accident event sequence number that initiated the air bag deployment (96) Deployed, unknown event (97) Not deployed (98) Unknown if deployed (99) Unknown	43. Was There Damage To The Air Bag? (00) Not equipped/not available (01) Not damaged Yes - Air Bag Damage (02) Ruptured (03) Cut (04) Torn
39. CDC For Air Bag Deployment Impact (0) Not equipped/not available (1) Highest delta V (2) Second highest delta V (3) Other non-coded delta V (specify): (6) Deployed, unknown event (7) Not deployed (8) Unknown if deployed (9) Unknown	(05) Holed (06) Burned (07) Abraded (88) Other damage (specify): (95) Damaged, details unknown (96) Deployed, unknown if damaged (97) Not deployed (98) Unknown if deployed (99) Unknown

	FIRST SEAT FRONTAL AIR BAG SYSTEM EVALUATION continued	HEAD RESTRAINT AND SEAT EVALUATION
	Source of Air Bag Damage (00) Not equipped/not available (01) Not damaged (02) Object worn by occupant, (specify): (03) Object carried by occupant, (specify): (04) Adaptive/assistive controls, (specify): (05) Fire in vehicle (06) Thermal burns (07) Rescue or emergency efforts (88) Other damage source (specify): (95) Damaged, unknown source (96) Deployed, unknown if damaged (97) Not deployed (98) Unknown if deployed (99) Unknown	49. Head Restraint Type/Damage by Occupant at This Occupant Position (0) No head restraints (1) Integral—no damage (2) Integral—damaged during accident (3) Adjustable—no damage (4) Adjustable—damaged during accident (5) Add-on—no damage (6) Add-on—damaged during accident (8) Other (specify): (9) Unknown 50. Seat Type (this Occupant Position) (00) Occupant not seated or no seat (01) Bucket (02) Bucket with folding back (03) Bench (04) Bench with separate back cushions (05) Bench with folding back(s)
	Was The Air Bag Tethered? (0) Not equipped/not available (1) No (2) Yes (specify number of tether straps):	(06) Split bench with separate back cushions (07) Split bench with folding back(s) (08) Pedestal (i.e., column supported) (09) Box mounted seat (i.e., van type) (10) Other seat type (specify):
46.	(3) Deployed, unknown if tethered (7) Not deployed (8) Unknown if deployed (9) Unknown Did The Air Bag Have Vent Ports? (0) Not equipped/not available (1) No (2) Yes (specify number of vent ports):	(99) Unknown 51. Seat Orientation (this Occupant Position) (0) Occupant not seated or no seat (1) Forward facing seat (2) Rear facing seat (3) Side facing seat (inward) (4) Side facing seat (outward) (8) Other (specify):
47.	(3) Deployed, unknown if vent ports present (7) Not deployed (8) Unknown if deployed (9) Unknown Was the Air Bag in this Occupant's Position Contacted by Another Occupant? (0) Not equipped/not available (1) No (2) Yes (specify): (3) Deployed, unknown if other occupant contact to air bag	(9) Unknown 52. Seat Track Adjusted Position Prior To Impact (0) Occupant not seated or no seat (1) Non-adjustable seat track Adjustable Seat Track (2) Seat at forward most track position (3) Seat between forward most and middle track positions (4) Seat at middle track position (5) Seat between middle and rear most track
48.	to air bag (7) Not deployed (8) Unknown if deployed (9) Unknown Was This Occupant Wearing Eye-wear? (0) Not equipped/not available (1) No (2) Eyeglasses/sunglasses (3) Contact lenses (4) Deployed, unknown if eyewear worn (7) Not deployed (8) Unknown if deployed (9) Unknown	positions (6) Seat at rear most track position (9) Unknown

HEAD RESTRAINT AND SEAT EVALUATION continued

- 53. Seat Back Incline Prior and Post Impact
 - (00) Occupant not seated or no seat
 - (01) Not adjustable

Upright prior to impact

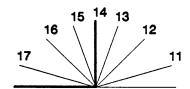
- (11) Moved to completely rearward position
- (12) Moved to rearward midrange position
- (13) Moved to slightly rearward position
- (14) Retained pre-impact position
- (15) Moved to slightly forward position
- (16) Moved to forward midrange position
- (17) Moved to completely forward position

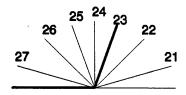
Slightly reclined prior to impact

- (21) Moved to completely rearward position
- (22) Moved to rearward midrange position
- (23) Retained pre-impact position
- (24) Moved to upright position
- (25) Moved to slightly forward position
- (26) Moved to forward midrange position
- (27) Moved to completely forward position

Completely reclined prior to impact

- (31) Retained pre-impact position
- (32) Moved to rearward midrange position
- (33) Moved to slightly rearward position
- (34) Moved to upright position
- (35) Moved to slightly forward position
- (36) Moved to forward midrange position
- (37) Moved to completely forward position
- (99) Unknown
- 54. Seat Performance (this Occupant Position)
 - (0) Occupant not seated or no seat
 - (1) No seat performance failure(s)
 - (2) Seat adjusters failed
 - (3) Seat back folding locks or "seat back" failed (specify):
 - (4) Seat track/anchors failed
 - (5) Deformed by impact of occupant
 - (6) Deformed by passenger compartment intrusion, (specify):
 - (7) Combination of above (specify):
 - (8) Other (specify):
 - (9) Unknown







	CI	HILD S	SAF	ETY	SE/	AT.	
55.	Child Safety Seat Make/Model (000) No child safety seat	0 0	2	58.	Child	Safety Seat Harness Usage	00
	Applicable codes are found in your NASS Data Collection, Coding and Editing (950) Built-in child safety seat	CDS		59.	Child	Safety Seat Shield Usage	<u> 0</u> D
	(997) Other make/model (specify): (998) Unknown make/model			60.	Child	Safety Seat Tether Usage	_00
	(999) Unknown if child safety seat used				Varia	: Options below applicable to bles OA58-OA60. No child safety seat	
56.	Type of Child Safety Seat		0		(00)	NO Clind Safety Seat	
	(0) No child safety seat (1) Infant seat (2) Toddler seat		_	us!		Designed With Harness/Shield/7 After market harness/shield/te added, not used	
	(3) Convertible seat				(02)	After market harness/shield/te	ther used
	(4) Booster seat - with shield(5) Booster seat - without shield				(03)	Child safety seat used, but no harness/shield/tether added	after market
	(7) Other type child safety seat (specify):(8) Unknown child safety seat type			-	(09)	Unknown if harness/shield/tethadded or used	ner
	(9) Unknown if child safety seat used			-	(11)	gned With Harness/Shield/Tethe Harness/shield/tether not used	
57.	Child Safety Seat Orientation (00) No child safety seat	00	2			Harness/shield/tether used Unknown if harness/shield/teth	ner used
					Unkn	own If Designed With Harness	/Shield/Tether
	Designed for Rear Facing for This Age/We	eight				Harness/shield/tether not used	
	(01) Rear facing (02) Forward facing					Harness/shield/tether used Unknown if harness/shield/teth	
	(08) Other orientation (specify):					Unknown if child safety seat u	
	(09) Unknown orientation						
	Designed For Forward Facing for This Age	/Weigh	,,				
	(11) Rear facing	,	`				
	(12) Forward facing						
	(18) Other orientation (specify):						
	(19) Unknown orientation						
	Unknown Design or Orientation For This						
	Age/Weight, or Unknown Age/Weight						
	(21) Rear facing (22) Forward facing						
	(28) Other orientation (specify):						
	(29) Unknown orientation						
	(99) Unknown if child safety seat used						

INJURY CONSEQUENCES	
61. Injury Severity (Police Rating) (0) O - No injury (1) C - Possible injury (2) B - Nonincapacitating injury (3) A - Incapacitating injury (4) K - Killed (5) U - Injury, severity unknown (6) Died prior to accident (9) Unknown	63. Type Of Medical Facility (for Initial Treatment) 2 (0) Not treated at a medical facility (1) Trauma center (2) Hospital (3) Medical clinic (4) Physician's office (5) Treatment later at medical facility (8) Other (specify):
62. Treatment - Mortality (0) No treatment (1) Fatal (2) Fatal - ruled disease (specify):	64. Hospital Stay (00) Not Hospitalized Code the number of days (up through 60) that the occupant stayed in hospital. (61) 61 days or more (99) Unknown
Nonfatal (3) Hospitalization (4) Transported and released (5) Treatment at scene - nontransported (6) Treatment later (7) Treatment - other (specify): (8) Transported to a medical facility-unknown if treated (9) Unknown	65. Working Days Lost Code the number of days (up through 60) that the occupant lost from work due to the accident (00) No working days lost (61) 61 days or more (62) Fatally injured (97) Not working prior to accident (99) Unknown
STOP W	ORK HERE

VARIABLES 66-74

TO BE CODED BY THE ZONE CENTER

TO BE CODED BY THE ZONE CENTER

66. Time to Death Code number of hours from time of accident to time of death up through 24 hours. If time of death is greater than 24 hours, code number of days. (Note: 1 day = 31, 2 days = 32, n days = 30 +n up 71. Glasgow Coma Scale (GCS) Score (at Medical Facility) (00) Not injured (01) Injured - not treated at medical facility (02) No GCS Score at medical facility (03-15) Code the actual value of the initial	7
31, 2 days = 32, n days = 30 +n up through 30 days = 60) (O0) Not fatal (96) Fatal - ruled disease (99) Unknown (03-15) Code the actual value of the initial GCS Score recorded at medical facility. (97) Injured, details unknown (99) Unknown if injured	•
67. 1st Medically Reported Cause of Death 68. 2nd Medically Reported Cause of Death 69. 3rd Medically Reported Cause of Death 67. 1st Medically Reported Cause of Death 68. 2nd Medically Reported Cause of Death 69. 3rd Medically Reported Cause of Death 69. 3rd Medically Reported Cause of Death	
injury(s) which reportedly contributed to this occupant's death (00) Not fatal or no additional causes (96) Mode of death given but specific injuries are not linked to cause of death. (specify): (00) Not injured (01) Injured, ABGs not measured or reported (02-50) Code the actual value of the HCO ₃ (96) ABGs reported, HCO ₃ unknown (97) Injured, details unknown (99) Unknown if injured	(
(97) Other result (includes fatal ruled disease) (specify): BELT USE DETERMINATION	
70. Number of Recorded Injuries for This Occupant Code the actual number of injuries recorded injuries (97) Injured, details unknown (99) Unknown if injured This Occupant O	3

Administration

National Highway Traffic Safety

2. Case Number - Stratum

Form Approved O.M.B. No. 2127-0021

NATIONAL ACCIDENT SAMPLING SYSTEM CRASHWORTHINESS DATA SYSTEM

OCCUPANT INJURY FORM

1. Primary Sampling Unit Number

4. Occupant Number

3. Vehicle Number

INJURY DATA

Record below the actual injuries sustained by this occupant that were identified from the official and unofficial data sources. Remember not to double count an injury just because it was identified from two different sources. If greater than ten injuries have been documented, encode the balance on the Occupant Injury Supplement.

_			A.I.S 90						Injury		Occupant
	Source of Injury Data	of Injury Body Anatomic Anato		Specific Anatomic Structure	Level of A.I.S.		Aspec	Injury et Source	Source Direct Confidence Indirect Level Injury		Area t Intrusion
1st	5 7/ 9	6. <u>2</u>	7. <u>4</u>	s. <u><i>0</i> 6</u>	9. <u>0 2</u>	10. <u> </u>	11. 1	12. <u> 7 0</u>	13. 1	14. <u> </u>	15. <u>0 0</u>
2nd	16 <u>7/9</u>	17. <u>2</u>	18. <u>4</u> 1!	9. <u>0 6</u>	20. <u>O 2</u>	21.	22. <u>2</u>	23. <u> 17 0</u>	24. <u>l</u> 2	25. <u> </u>	_{26.} <u>0</u> 0
3rd	27	28	29. <u> </u>	o	31	32	33	34	35	36	37
4th	38	39	40 4	l	42. <u> </u>	43	44	45	46	47	48
5th	49	50	51 52	2	53	54	55	56	57. <u> </u>	i8	59
6th	60	61	62 6:	3	64	65	66	67	68	39	70
7th	71,	72	73 74	ı	75	76	77	78	79 8	30	B1
8th	82	83	84. <u> </u>	i,	86	87	88	89	90 \$)1	92
9th	93	94	95 96	3	97	98	99	100	101 10)21	03
10th	104	105 10	03 107	/ 1	08	109. ¹	110.	111	112. 11	13. 1	14.

HS Form 433B (1/95)

This report is authorized by P.L. 89-563, Title 1, Section 106, 108, and 112. While you are not required to respond, your cooperation is needed to make the results of this data collection effort comprehensive, accurate, and timely.

OCCUPANT INJURY CLASSIFICATION

Body Region

- Head (1)
- (2) Face
- (3) Neck
- (4)Thorax
- Abdomen (5)
- (6)Spine
- (7)**Upper Extremity**
- (8) Lower Extremity
- (9) Unspecified

Type of Anatomic Structure

- Whole Area (1)
- (2) Vessels
- (3) Nerves
- (4) Organs (includes Muscles/ligaments)
- (5) Skeletal (includes joints)
- (6) Head - LOC
- (9) Skin

Specific Anatomic Structure

Vessels, Nerves, Organs. Bones, Joints are assigned consecutive two digit numbers beginning with 02.

The exceptions to this rule apply to:

Whole Area

- (02) Skin Abrasion
- (04) Skin Contusion
- (06) Skin Laceration
- (08) Skin Avulsion (10) Amputation
- (20)Burn
- (30)Crush
- (40)Degloving
- (50)Injury - NFS
- Trauma, other than (90) mechanical

Head - LOC

- (02) Length of LOC
- (04) Level
- (06) of
- (08) Consciousness
- (10) Concussion

Spine

- (02)Cervical
- (04) Thoracic
- (06) Lumbar

Level of Injury

Specific injuries are assigned consecutive two-digit numbers beginning with 02.

To the extent possible. within the organizational framework of the AIS, 00 is assigned to an injury NFS as to severity or where only one injury is given in the dictionary for that anatomic structure. 99 is assigned to any injury NFS as to lesion or severity.

Abbreviated Injury Scale

- Minor Injury (1)
- (2) Moderate Injury
- (3) Serious Injury
- (4) Severe Injury
- (5) Critical Injury Maximum
- (6) (untreatable)
- (7) Injured, unknown severity

Aspect

- (1)Right
- (2) Left
- (3)**Bilateral** (4)Central
- (5) Anterior
- (6) Posterior
- (7)Superior
- (8) Inferior
- (9) Unknown (0) Whole region

SOURCE OF INJURY DATA INJURY SOURCE DIRECT/INDIRECT INJURY **CONFIDENCE LEVEL OFFICIAL RECORDS** (1) Autopsy records with or (1) Certain (1) Direct contact injury without hospital/medical (2) Probable (2) Indirect contact injury records (3) Possible Noncontact injury (2) Hospital/medical records other (9) Unknown (7) Injured, unknown source than emergency room (e.g., discharge summary) (3) Emergency room records only (including associated X-rays or other lab reports) (4) Private physician, walk-in or emergency clinic **UNOFFICIAL RECORDS** (5) Lay coroner report (6) E.M.S. personnel (7) Interviewee (8) Other source (specify): (9) Police

			. INJURY	SOUF	RCES		
FRON	Т	(102)	Right side hardware or	/1821	Air bag-passenger side and	(411)	Wall mounted head rest
	Windshield	(102)	armrest	(103)	object held	(411)	(used behind wheel chair)
(002)	Mirror	(103)	Right A (A1/A2)-pillar	(184)	Air bag-passenger side and	(412)	Other adaptive device
,	Sunvisor	(104)	Right B-pillar		object in mouth		(specify):
i	Steering wheel rim	(105)	Other right pillar (specify):	(185)	Air bag compartment		
)	Steering wheel hub/spoke	(400)	District to the second		cover-passenger side		
(006)	Steering wheel (combination of codes 004 and 005)		Right side window glass	(186)	Air bag compartment		RIOR of OCCUPANT'S
(007)	Steering column,		Right side window frame Right side window sill		cover-passenger side and eyewear	VEHIC	
1 (00//	transmission selector lever,		Right side window glass	(187)	Air bag compartment		Hood Outside hardware (e.g.,
l	other attachment	(1.00)	including one or more of the	(1077	cover-passenger side and	(402)	outside mirror, antenna)
(800)	Cellular telephone or CB		following: frame, window		jewelry	(453)	Other exterior surface or
1	radio		sill, A (A1/A2)-pillar, B-pillar,	(188)	Air bag compartment		tires (specify):
(009)	Add on equipment (e.g.,		or roof side rail.		cover-passenger side and		
	tape deck, air conditioner)	(110)	Other right side object		object held		
(010)	Left instrument panel and		(specify):	(189)	Air bag compartment	(454)	Unknown exterior objects
(011)	below Center instrument panel and				cover-passenger side and	EVE	DIOD OF OTHER MOTOR
l ''''	below	INTER	IOR	(190)	object in mouth Other air bag (specify)	VEHIC	RIOR OF OTHER MOTOR
(012)	Right instrument panel and		Seat, back support	, , 30)	Caron an pag (specify)		Front bumper
	below		Belt restraint	(195)	Other air bag compartment		Hood edge
(013)	Glove compartment door		webbing/buckle	•	cover (specify)		Other front of vehicle
(014)	Knee bolster	(153)	Belt restraint B-pillar or door				(specify):
(015)	Windshield including one or		frame attachment point				
	more of the following: front	(154)	Other restraint system	ROOF		(504)	Hood
l	header, A (A1/A2)-pillar,		component (specify):		Front header		Hood ornament
ŀ	instrument panel, mirror, or steering assembly (driver	/1EE\	Head restraint system		Rear header		Windshield, roof rail, A-pillar
	side only)		Other occupants (specify):		Roof left side rail Roof right side rail		Side surface Side mirrors
(016)	Windshield including one or	(100)	Other occupants (specify).		Roof or convertible top		Other side protrusions
	more of the following: front	(161)	Interior loose objects	,,	the content of the	(000)	(specify):
	header, A (A1/A2)-pillar,	(162)	Child safety seat (specify):	FLOO	R		
ļ	instrument panel, or mirror			(251)	Floor (including toe pan)	(510)	Rear surface
	(passenger side only)	(163)	Other interior object	(252)	Floor or console mounted	(511)	Undercarriage
(017)	Windshield reinforced by		(specify):		transmission lever, including	(512)	Tires and wheels
1	exterior object (specify)				console	(513)	Other exterior of other
(019)	Other front object (specify):	AIR B	A.G.		Parking brake handle		motor vehicle (specify):
(0.0)	other traine object (specify).		Air bag-driver side	(254)	Foot controls including parking brake		
			Air bag-driver side and		parking brake	(514)	Unknown exterior of other
LEFT :	SIDE		eyewear	REAR		(011)	motor vehicle
(051)	Left side interior surface,	(172)	Air bag-driver side and	(301)	Backlight (rear window)		
	excluding hardware or		je welry	(302)	Backlight storage rack,	OTHE	R VEHICLE OR OBJECT IN
	armrests	(173)	Air bag-driver side and		door, etc.	THE E	ENVIRONMENT
(052)	Left side hardware or		object held	(303)	Other rear object (specify):	(551)	Ground
(053)	armrest Left A (A1/A2)-pillar	(1/4)	Air bag-driver side and			(598)	Other vehicle or object
1	Left B-pillar	(175)	object in mouth Air bag compartment	ADAD	TIVE (ACCIPTIVE) PRIVING		(specify):
i	Other left pillar (specify):	(175)	cover-driver side		TIVE (ASSISTIVE) DRIVING	(500)	Unknown vehicle or object
		(176)	Air bag compartment		Hand controls for	(033)	OUVIDANT ABUICIS OF ODJECT
(056)	Left side window glass		cover-driver side and	,	braking/acceleration	NONC	CONTACT INJURY
(057)	Left side window frame	*	eyewear	(402)	Steering control devices		Fire in vehicle
	Left side window sill	(177)	Air bag compartment		(attached to OEM steering		Flying glass
(059)	Left side window glass		cover-driver side and jewelry		wheel)		Other noncontact injury
	including one or more of the	(178)	Air bag compartment	(403)	Steering knob attached to		source
	following: frame, window		cover-driver side and object		steering wheel		(specify):
	sill, A (A1/A2)-pillar, B-pillar, or roof side rail.	(170)	held Air has compartment	(405)	Replacement steering wheel		Air bag exhaust gases
(060)	Other left side object	(1/3)	Air bag compartment cover-driver side and object	IADEL	(i.e., reduced diameter)	(697)	Injured, unknown source
,	(specify):		in mouth		Joy stick steering controls Wheelchair tie-downs		
		(180)	Air bag-passenger side		Modification to seat belts,		
			Air bag-passenger side and	•	(specify):		
RIGHT			eyewear	(409)	Additional or relocated		
(101)	Right side interior surface,	(182)	Air bag-passenger side and		switches, (specify):		
	excluding hardware or		jewelry				
	armrests			(410)	Raised roof		
L							

OFFICIAL INJURY DATA — SOFT TISSUE INJURIES

Indicate the Location, Specific Anatomic Structure, Detail (size, depth, fracture type, head injury clinical signs and neurological deficits), and Source of all injuries indicated by official sources (or from PAR or other unofficial sources if medical records and interviewee data are unavailable.)

