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Washington, D.C. 20590

U.S. Department
of Transportation

**National Highway
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Dear Crash Data Researchers/Users:

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If you requested NHTSA to query its database files in order to identify a specific crash, then that query was made using non-personal descriptors you provided for use in our search. This motor vehicle crash may have been identified from a data search and matches the general, non-personal descriptors you provided, but we cannot confirm that this is the specific crash report you requested.

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TRANSPORTATION SCIENCES CENTER
ACCIDENT RESEARCH SECTION

Division of Arvin/Calspan
[redacted], New York [redacted]

CALSPAN REMOTE AIR BAG DEPLOYMENT INVESTIGATION

CASE NO. 90-20

FLEET - 1990 LINCOLN CONTINENTAL

LOCATION - [redacted], NY

ACCIDENT DATE - [redacted], 1990

Contract No. DTNH22-87-C-27169

Prepared for:

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

TECHNICAL REPORT STANDARD TITLE PAGE

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Transportation Sciences Center Accident Research Section Division of Arvin/Calspan P.O. Box 400, Buffalo, NY 14225	[redacted] 11. Contract or Grant No. DTNH22-87-C-27169
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U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D.C. 20590	Technical Report Accident Date [redacted]/90 14. Sponsoring Agency Code

15. Supplementary Notes Remote investigation of an air bag deployment crash that involved a 1990 Lincoln Continental equipped with driver and passenger air bags. The 8-year-old right front occupant was slightly out of position to her left. She sustained a forehead abrasion from her contact with the passenger air bag.

16. Abstract

This report focuses on an air bag deployment crash that involved a 1990 Lincoln Continental that was equipped with both driver and passenger air bags. The full frontal area of the Lincoln impacted the rear of a Ford passenger car that resulted in a sufficient longitudinal deceleration to deploy the dual air bag system. The driver of the Lincoln was a 41-year-old male, belted by the active 3-point lap and shoulder belt system. He loaded the active belt webbing and the deployed air bag and was not injured. His 8-year-old daughter was seated in the right front position and was wearing the active 3-point belt system. At impact she was slightly out of position to her left as she attempted to adjust the radio. The passenger air bag deployed and contacted her face and torso which resulted in a superficial abrasion of her forehead at the hairline.

The vehicle sustained moderate damage and was repaired.

17. Key Words	18. Distribution Statement
Remote investigation 1990 Lincoln Continental Driver and passenger air bag system Out of position occupant	General Public

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The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the National Highway Traffic Safety Administration.

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.

CALSPAN REMOTE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 90-20

FLEET - 1990 LINCOLN CONTINENTAL
LOCATION - [redacted], NY

SUMMARY

This crash occurred in a school zone on a local street in [redacted], NY on [redacted], 1990. A 1990 Lincoln Continental, equipped with a driver and passenger air bag system, was following a Ford passenger vehicle at a driver estimated speed of 20-25 mph. A pedestrian darted across the Ford's path of travel and its driver braked rapidly to avoid impact. The driver of the Lincoln braked; however, his vehicle did not have a sufficient stopping distance to avoid impact with the Ford.

The grille and header panel area of the Lincoln impacted the rear bumper of the Ford resulting in a 12 o'clock/6 o'clock impact configuration. The bumper of the Lincoln underrode the rear of the Ford due to the pre-impact braking and front suspension compression of both vehicles. The impact resulted in a sufficient longitudinal deceleration to deploy the Lincoln's driver and passenger air bag system.

The driver of the Lincoln was a 41-year-old male, 71", 210 lbs. He was wearing the active 3-point lap and shoulder belt system. At impact he initiated a forward trajectory and loaded the active and passive restraint systems. As a result of restraint loading, he was not injured. His right front passenger was his 8-year-old daughter who was slightly out of position to her left. The 48" tall, 80 lb. occupant was wearing the active belt system. The driver stated that she was reaching to adjust the radio when the crash occurred. The passenger air bag deployed and contacted her face and thoracic areas. She sustained a superficial abrasion of the forehead (AIS-1) at the hairline from her involvement with the passenger bag. Both occupants rebounded into their respective seatbacks where they came to rest. The driver refused medical treatment for both himself and his daughter.

The Lincoln was towed from the scene and was subsequently repaired at a cost of $6,550.00 which included air bag system replacement.

CALSPAN REMOTE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 90-20

FLEET - 1990 LINCOLN CONTINENTAL
LOCATION - [redacted] NY
ACCIDENT DATE - [redacted], 1990

ACCIDENT DATA

Location/Street:	Local street
City/Township:	[redacted], NY
Area/Type:	Urban/School area
Accident Date/Time:	[redacted], 1990
Investigating Police Agency:	[redacted] Police
Accident Type:	Car/Car, front to rear impact configuration
Air Bag Vehicle Occupant Injury Severity:	Driver - Not injured Passenger - Minor (AIS-1)

AMBIENCE

Light Conditions:	Daylight
Weather:	Clear
Precipitation:	None
Road Surface:	Dry

HIGHWAY

Location:	Local street
Number of Lanes:	2
Surface:	Asphalt
Vertical Alignment:	Level
Horizontal Alignment:	Straight
Traffic Density:	Heavy
Speed Limit:	15 mph (school zone)
Traffic Controls:	School zone speed limit signs

VEHICLES

	Air Bag Vehicle	Vehicle #2
Year:	1990	Unknown
Make:	Lincoln	Ford
Model:	Continental	
Body Style:	4 dr. sedan	
V.I.N.:	Unknown	
Mileage:	12,000 (approximate)	
Windshield Damage/Source:	No damage	
Fleet:	Lincoln Continental	
Tow Status:	Towed due to damage	
Reported Defects:	None	
Previous Repairs:	None	

VEHICLE DAMAGE

Deployment Impact

Object Struck:	Vehicle #2	
Event Number:	1	
Damage Location:	Front, distributed	Rear, distributed
CDC:	12-FDMW-1	06-BDLW-1(estimated)
Estimated Maximum Crush:	Unknown, minimal	Unknown
Damaged Components:	Grille, header panel, both headlight assemblies, air conditioning condensor, radiator, radiator support panel	Driver #1 described damage to vehicle #2 as a few scratches to the rear bumper
Repair Estimate:	$6550.00, inclusive of driver and passenger air bag replacement	Unknown
Interior (Air Bag Vehicle):	None reported other than deployment of the driver and passenger air bag systems	

COLLISION SEQUENCE

Pre-Crash: The 1990 Lincoln Continental was traveling in a posted school zone at a driver estimated speed of 20-25 mph. He was following vehicle #2 which was traveling at a similar speed. A student from the school darted across vehicle #2's path of travel. The driver of vehicle #2 braked heavily to avoid impact with the pedestrian. The driver of the air bag equipped Lincoln applied his brakes in an attempt to avoid contact with vehicle #2. His vehicle was equipped with anti-lock brakes which prevented his tires from skidding on the asphalt road surface. The front of his vehicle pitched downward as it continued forward in its decelerative mode.

Crash: The full frontal area of the Lincoln impacted and underrode the rear of vehicle #2. The driver of the Lincoln estimated his impact speed at 15-20 mph. The impact resulted in damage to the Lincoln's grille and headlight area. The vehicle sustained a sufficient decelerative pulse from the 12 o'clock impact force to deploy the vehicle's driver and passenger air bag system.

The driver of the vehicle was a 41-year-old male, 71" tall and 210 lbs. He was wearing the active 3-point lap and shoulder belt system. At impact, the driver stated that he heard a "pop", noticed the air bags, then realized he was involved in a crash. The driver moved forward and loaded the active belt webbing and the deployed air bag. As a result of restraint loading, the driver was not injured.

The right front passenger was an 8-year-old female, 48" tall with a driver estimated weight of 80 lbs. She was slightly out of position to her left as she reached to adjust the radio. The passenger was also wearing the active belt system. At impact, the passenger air bag system deployed and probably contacted the face and torso of the young occupant. Her contact with the air bag resulted in a superficial abrasion of the forehead at the hairline. Both occupants rebounded into their respective seatbacks where they came to rest.

Post-Crash: The driver of the Lincoln stated that his vehicle came to rest against the rear of vehicle #2. Immediately following the crash, he noticed a smoke-like substance within the vehicle. He further stated that a student who witnessed the crash ran to his vehicle and yelled, "Hey mister, your car is on fire." The "smoke" was a result of the dual air bag deployment.

The Lincoln was subsequently towed from the scene due to radiator damage. Vehicle #2 sustained extremely minor damage and was driven from the scene. The driver and passenger of the Lincoln did not require medical treatment.

DRIVER DATA

	Air Bag Vehicle
Age:	41
Sex:	Male
Height:	71"
Weight:	210 lbs.
Occupation:	Attorney
Active Restraint System Usage:	3-point lap and shoulder belt system
Usage Source:	Driver interview
Eyeglasses:	None
Vehicle Familiarity:	9 months
Route Familiarity:	Daily
Trip Plan:	Transporting daughter to school
Type of Medical Treatment:	None

DRIVER INJURIES

Injury	Severity (OIC/AIS)	Source
Not injured	N/A	N/A

PASSENGER DATA

Age:	8-year-old female
Sex:	Female
Height:	48"
Weight:	80 lbs.
Seated Position:	Right front, slightly out of position to left (adjusting radio)
Active Restraint System Usage:	3-point lap and shoulder belt system
Usage Source:	Driver interview
Type of Medical Treatment:	None

PASSENGER INJURIES

Injury	Severity (OIC/AIS)	Source
Small superficial abrasion of the forehead at the hairline	Minor (FSAI-1)	Passenger air bag

ATTACHMENT A

Driver's Letter to Ford

[redacted]
ATTORNEY AT LAW
[redacted]

NEW YORK

[redacted], 1990

FAX TRANSMITTAL LABEL
TO [redacted]
DEPT. Field Ops
FAX # [redacted]
NUMBER OF PAGES
FROM [redacted]
CO.
PHONE # [redacted]
FAX # [redacted]

[redacted]

Gentlemen:

I just had the unfortunate experience of being involved in a severe front-end accident with my 1990 Lincoln Continental. However, due to the driver's side and passenger airbags, neither myself nor my daughter suffered any injuries.

I was literally amazed at the speed and the effectiveness with which the airbags inflated. In fact, I remember seeing the airbags before I fully comprehended that there was an impact. That's truly split-second operation. My eight year old daughter and I were both seat belted and harnessed, however we both pitched forward and without the airbag, I know that we would have had direct contact with the steering wheel and dashboard. I can't describe the feeling of seeing my daughter hit the airbag and come right back in the same safe condition.

I don't know exactly what division or administrative office should be receiving my thanks. But whoever had the foresight to install both driver and passenger side airbags should be highly commended. This may sound like a commercial, but having lived through the experience, I shudder to think of what the result might have been without the Lincoln commitment to safety.

Sincerely,

[redacted]

[redacted]

** TOTAL PAGE.002 **