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**National Highway
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TRANSPORTATION SCIENCES CENTER
ACCIDENT RESEARCH GROUP

Division of Arvin/Calspan
[REDACTED] New York [REDACTED]

[REDACTED] 1992

CALSPAN REMOTE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 90-8

VEHICLE - POLICE 1988 PLYMOUTH GRAND FURY

LOCATION - [REDACTED] NY

ACCIDENT DATE - [REDACTED], 1990

Contract No. DTNH22-87-C-27169

Prepared for:

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TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 90-8		2. Government Accession No.		3. Recipient's Catalog No.	
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15. Supplementary Notes Remote investigation of an air bag deployment incident that involved a police 1988 Plymouth Grand Fury. The driver of the vehicle stated that the bag deployed inadvertently without impact; however, the service garage foreman stated that the vehicle impacted a curb which deployed the bag.					
16. Abstract <p>This remote investigation focused on a reported inadvertent deployment of the driver air bag system in a police 1988 Plymouth Grand Fury. The driver was responding to a police call and reported that the air bag deployed without impact. He heard a loud bang and noted smoke within the vehicle and initially thought he had been shot by a gun. The driver ducked to his right and swerved into a parking lot where he brought the vehicle to a controlled stop. The driver sustained an abrasion of the anterior left forearm from the deploying air bag. A fellow officer assisted him from the vehicle and reportedly was overcome from inhaling the gases that were present in the vehicle. The driver reported that the vehicle was not damaged and that it was not involved in an impact sequence.</p> <p>Telephone interviews were conducted with the Squad Commander of the police department, the driver of the vehicle, and the foreman of the garage who maintains the police vehicles. The officer stated that the vehicle hit a bump in the road with a tire or an undercarriage component which could have deployed the bag. He was not aware of any damage to the vehicle. The garage foreman stated that the vehicle impacted a curb which produced significant damage to the lower left control arm and the K-frame. The vehicle was towed to the service garage and was removed from service. He further stated that the police drive the vehicles very hard and try to "cover" for their mistakes. The foreman stated that this was the second undercarriage impact accident that involved a deployment in one of their vehicles. (The other accident was Calspan Case No. 88-36.)</p>					
17. Key Words Alleged inadvertent deployment Reported curb impact Abrasion of the left forearm (AIS-1)			18. Distribution Statement General Public		
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CALSPAN REMOTE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 90-8

VEHICLE - POLICE 1988 PLYMOUTH GRAND FURY
LOCATION - ██████████, NY

SUMMARY

This remote investigation focused on an air bag deployment in a police 1988 Plymouth Grand Fury. Telephone interviews were obtained from the driver of the vehicle, a Squad Commander at the police department, and the foreman of the service garage that maintains and repairs the police vehicle. The driver and garage foreman identified different scenarios for the deployment sequence. The incident occurred on ██████████, 1990 during daylight hours.

The driver of the Plymouth Grand Fury was an adult male, 73", 180 lbs. He was not wearing the active 3-point lap and shoulder belt system. The driver was responding to a police call and was traveling in a northerly direction at an estimated speed of 32 mph. He stated that his seat was adjusted to a mid track position and the tilt steering column was set 1 or 2 settings above the center adjustment point. The driver was leaning to his right with his right arm resting on the center armrest and his left hand was on the steering wheel rim at the 10-11 o'clock position.

While en route to the police call, the driver stated that he heard a loud bang, noted smoke within the vehicle, and felt a burning sensation in his left arm. He initially thought he had been shot and ducked to his right. The driver applied a clockwise steering input and drive the vehicle into a parking lot where he brought it to a controlled stop. At this point, he observed the deployed air bag extending from the steering wheel and assumed that the bag deployed inadvertently. The driver denied that the vehicle had impacted an object or curb which could have resulted in air bag deployment.

A fellow officer who was following the involved Grand Fury noted the vehicle as it departed the roadway. He stopped behind the vehicle and assisted the driver from the Grand Fury. The other officer was overcome by the gas and smoke within the vehicle from the deployed air bag. Both police officers were transported to a local hospital where they were treated for their injuries and released. The driver of the vehicle was diagnosed with a burn of the anterior aspect of the left forearm that extended from the wrist to the forearm. He stated that the injury scabbed over and healed in approximately one week. The injury was a probable abrasion (AIS-1) that resulted from contact with the deploying air bag.

The foreman of the service garage inspected the vehicle following the alleged inadvertent deployment. He noted significant deformation of the left front lower control arm and K-frame (crossmember) assembly. The foreman suspected that the vehicle had impacted a curb which resulted in deployment of the driver air bag system. He further stated that the officers typically tried to cover up for their mistakes that involve vehicle damage. The foreman stated that this was the second air bag deployment that resulted from undercarriage impacts in their police fleet.

SUMMARY (CONT'D.)

The Squad Commander confirmed the alleged inadvertent deployment scenario; however, he was aware of the undercarriage damage and stated that the vehicle possibly struck a bump or a pothole which deployed the air bag. Based on the damage to the vehicle and the design of the air bag system which utilizes a secondary safing sensor, it was doubtful that the air bag deployed inadvertently.

CALSPAN REMOTE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 90-8

FLEET - POLICE 1988 PLYMOUTH GRAND FURY
LOCATION - [REDACTED], NEW YORK

ACCIDENT DATA

Location/Street: Town road
City/Township: [REDACTED], NY
Area/Type: Urban/Residential
Accident Date/Time: [REDACTED], 1990, daylight hours
Investigating Police Agency: [REDACTED] Police Dept.
Accident Type: Alleged inadvertent deployment or possible undercarriage impact with curb
Air Bag Vehicle Driver Injury Severity: Minor (AIS-1)

AMBIENCE

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

HIGHWAY

Location: Town road
Number of Lanes: 2
Surface: Asphalt
Vertical Alignment: Level
Horizontal Alignment: Straight
Traffic Density: Moderate
Speed Limit: 30 mph

VEHICLE

Year: 1988
Make: Plymouth
Model: Grand Fury
Body Style: 4 dr. sedan
V.I.N.: Unknown
Mileage: 30,000
Windshield Damage/Source: None
Fleet: Police
Tow Status: Towed

VEHICLE DAMAGE

Object Struck: Curb (Probable)
Event Number: 1
Damage Location: Left undercarriage
CDC: 00-UFLW-1
Damaged Components: Left lower control arm and the K-frame (crossmember)
Repair Cost: Unknown, vehicle was removed from service
Interior: None, other than deployment of the driver air bag system

AIR BAG DEPLOYMENT SEQUENCE

There were two different scenarios identified for this remote air bag deployment investigation. Telephone interviews were conducted with the driver of the vehicle, a Squad Commander at the police department, and the foreman of the service garage that maintains the vehicles.

The driver of the 1988 Plymouth Grand Fury stated that he was responding to a police call and was traveling in a northerly direction at an estimated speed of 32 mph. He reported that he heard a loud bang, noted smoke within the vehicle, and felt a burning sensation in his left arm. The driver immediately ducked to his right and assumed that he had been shot. He steered the vehicle to the right into a parking lot where he brought the Grand Fury to a controlled stop. As he stopped the vehicle, he observed the deployed air bag extending from the steering wheel and realized the air bag had deployed. The driver stated that he did not hit anything and that the

AIR BAG DEPLOYMENT SEQUENCE (CONT'D.)

bag deployed inadvertently. A fellow officer who was following him, stopped and assisted the driver from the vehicle. The assisting officer was overcome by the smoke and fumes from the deployed air bag. Both officers were examined at a local hospital and released. The driver of the vehicle was diagnosed with a burn of his anterior left forearm that extended from the wrist to the elbow, from the chemicals within the bag. He described the injury as an area of redness that scabbed over and healed in approximately one week. The burn was a probable abrasion from contact with the deploying air bag.

The service garage foreman inspected the vehicle following the alleged inadvertent deployment and noted damage to the lower left front control arm and the K-frame (crossmember). He described the damage as extensive and stated that the vehicle impacted a concrete curb which resulted in air bag deployment. The foreman added that the officers typically cover for their mistakes with the patrol vehicles and that this was the second undercarriage impact which resulted in deployment within their fleet.

The squad commander stated that the air bag deployed inadvertently; however, he was aware of the undercarriage damage and said that it was possible that the vehicle hit a bump or a pothole in the road which could have caused the deployment.

DRIVER DATA

Age:	Adult male, age unknown
Sex:	Male
Height:	73"
Weight:	180 lbs.
Occupation:	Police officer
Active Restraint System Usage:	None
Usage Source:	Police and driver statements
Eyewear:	None
Vehicle Familiarity:	Periodically for 1 year
Route Familiarity:	Daily
Trip Plan:	Responding to a police call
Manner of Leaving Scene:	Ambulance
Type of Medical Treatment:	Treated at a local hospital and released

DRIVER INJURIES

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
Abrasion of the anterior left arm, extends from the wrist to mid upper arm	Minor (XLAI-1)	Air bag

DRIVER KINEMATICS

The driver of the 1988 Plymouth Grand Fury was leaning to his right with his right arm resting on the fold down center armrest. His seat was adjusted to a mid track position and the tilt steering column was set 1 or 2 positions above the center adjustment point. The driver was not wearing the active 3-point lap and shoulder belt system. His left hand was positioned on the upper left quadrant of the steering wheel rim. As the driver air bag system deployed, the bag contacted the anterior aspect of his left forearm which resulted in a probable abrasion that extended from the wrist to the mid upper arm. He did not contact additional interior components or sustain further injury.

ATTACHMENT

Newspaper Coverage

Hazards of auto air

Officials fear emergency workers at risk over air bag's chemicals

By [redacted] Staff Writer

[redacted] police, fire and ambulance officials are concerned that chemicals used to inflate automobile safety air bags could be a hazard for emergency workers aiding crash victims.

Officials recently began to suspect air bags might be a problem when one prematurely inflated in a [redacted] police car. The officer received minor burns, and two officers who went to help got minor injuries from inhaling gases released by the bag.

"There is a great deal of concern about air bags and the effect of the materials used to inflate air bags," said [redacted] Fire Coordinator [redacted]

With air bags becoming standard equipment on some cars, [redacted] said fire and ambulance officials are concerned emergency workers could be injured because the dangers are not widely known.

Some [redacted] volunteer ambulance

NEWS - [redacted] 1990

safety bags studied

ambulance corps members are requesting that a fire department be automatically called to car accidents involving vehicles equipped with air bags.

"My people are not equipped with breathing devices to protect themselves," said [redacted] captain of the [redacted] Volunteer Ambulance Corps in [redacted]. "I don't want to have my people get hurt unnecessarily. So I'd rather have the fire department there, too,

to help."

[redacted] is developing a special training program to instruct emergency service workers on the handling of automobile air bags. He said officials of the Chrysler Corp. are working with his department to prepare the program.

[redacted] said the chemicals used in air bags are designed to make them quickly inflate and deflate. But the chemicals cause burns and are hazardous when inhaled, he said.

He also said the chemical makes a car's steering column "white hot" and difficult to work with in an emergency situation.

[redacted] said emergency workers are concerned they might accidentally trigger an air bag. He said only firefighters have the equipment to deactivate an air bag.

[redacted] Supervisor [redacted] said the town police de-

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partment has several 1988 model cars equipped with air bags. There have been three incidents in which the bags deployed for no apparent reason.

"Our people are very unhappy with the air bags so far," [redacted] said.

[redacted] Emergency Medical Services coordinator, said most ambulance workers are now considering air bag cases to be hazardous materials incidents.

"Until people are trained, there will be a lot of fears about these air

bags," [redacted] said.

[redacted] Deputy Fire Coordinator [redacted] said this is not the first time an auto safety improvement has led to dangers for emergency service workers.

[redacted] said the installation of collapsible bumpers helped reduce damage and injury in many crashes. But the shock absorber-style equipment used to hold these bumpers has been known to explode in car fires, sending the bumper flying like giant pieces of shrapnel.

He also said equipment to hold

up hatchback doors and windows have been known to explode under the intense heat of a fire.

"With every invention comes some kind of problem," [redacted] said. "These things are dangers to people in emergency services until they learn what to do to avoid the danger."

[redacted] said the training sessions developed with Chrysler would also help emergency workers with Ford and General Motors automobiles. He said all three companies use the same chemicals in air bag systems.