Remote, Redesigned Air Bag Special Study

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Dynamic Science, Inc., Case Number (1998-073-801G)

1998 Dodge Neon

Indiana

August/1998

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16. Abstract

This remote investigation focused on the redesigned air bag system deployment in a 1998 Dodge Neon two-door sedan. This is a two-vehicle crash which occurred in the early evening hours in August, 1998. It was raining at the time of the crash. The crash occurred in a four-leg intersection.

Vehicle 2 (the case vehicle) was traveling north on a bituminous two-lane, undivided roadway approaching a four-leg intersection. The roadway is straight at this location and there is a positive grade. The speed limit is 48 km/h (30 mph). This vehicle was being driven by a properly restrained 20-year-old male.

Vehicle 1, a 1996 Pontiac Grand Prix 2-door sedan driven by a 25-year-old female, was traveling westbound on a two-lane undivided roadway approaching the same intersection. There was second person in this vehicle, occupying the front right seat position. The roadway is straight at this location and there is a positive grade. The speed limit is 48 km/h (30 mph) and this leg of the intersection is controlled by a stop sign.

As Vehicle 2 approached the intersection, Vehicle 1 pulled out from the stop sign into the intersection. The driver of Vehicle 1 braked but was unable stop in time and struck the left side of Vehicle 1 with the front of Vehicle 2. (CDC=12FDEW1). The impact was of sufficient magnitude as to deploy both the driver and passenger side air bags. Vehicle 2 was redirected slightly in a counterclockwise direction, while Vehicle 1 was redirected slightly in a clockwise direction. Both vehicles came to rest in the intersection.

There were no injuries reported by any parties involved. Vehicle 2 was towed from the scene due to damage. Vehicle 1 was driven from the scene.

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Summary

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Figure 1. Exterior, Vehicle 2, 1998 Dodge Neon

Vehicle 1, a 1996 Pontiac Grand Prix 2-door sedan driven by a 25-year-old female, was traveling westbound on a two-lane undivided roadway approaching the same intersection. There was second person in this vehicle, occupying the front right seat position. The roadway is straight at this location and there is a positive grade. The speed limit is 48 km/h (30 mph) and this leg of the intersection is controlled by a stop sign.

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Table 1. Delta V

	Case Vehicle		Other Vehicle	
	km/h	mph	km/h	mph
Total	25	15.5	19.3	12
Longitudinal	-25	-15.5	-5	-3.1
Lateral	-4	-2.5	18.6	11.6

Exterior of Case Vehicle

Table 2. Vehicle Information

Model year, make and model	1998 Dodge Neon
VIN	1B3ES42Y1WD
CDC	12FDEW1 (010E)

Table 3. Crush Measurements

Plane of Impact	Field L cm/in.	C1 cm/in.	C2 cm/in.	C3 cm/in.	C4 cm/in.	C5 cm/in.	C6 cm/in.
Bumper	136	26	18	19	12	11	19
	53.5	10.2	7.1	7.5	4.7	4.3	7.5

Interior of Case Vehicle

This vehicle is equipped with front bucket seats with folding backs with adjustable head restraints. There was no indication of any damage. The seat was adjusted to the between the middle and rear most track position. Both the left and right side windows disintegrated due to the impact forces. There was no intrusion. The vehicle was equipped with a fixed steering column. There was no rim damage nor any compression noted. The lower instrument panel was equipped with a rigid plastic knee bolster. There was no damage to the bolster.

Figure 2. Interior, Vehicle 2

Case Vehicle Occupant Protection Systems

The Dodge Neon was equipped with "Next Generation" driver and front-passenger air bags. The front left air bag was housed in the steering wheel hub and was concealed by a single module cover. The circular air bag was tethered by two tether straps and contained two vent ports. There was an occupant contact located on the right side of the face of the air bag, but there was no damage to the air bag.

Figure 3. Interior, Vehicle 2

The front right passenger air bag was located on the instrument panel, top surface plane. There was a single, essentially rectangular module cover.

The front bucket seats were equipped with active three-point lap and shoulder restraints.

Case Vehicle Occupant Demographics

	Occupant 1
Age/Sex:	20/Male
Seated Position:	Front left
Seat Type:	Bucket with folding back
Height (cm/in:):	173 cm (68 in)
Weight (kg/lbs).:	73 kg (160 lbs)
Pre-existing Medical Condition:	None noted
Body Posture:	Normal/Upright
Hand Position:	Unknown
Foot Position:	Right foot depressing the brake pedal
Restraint Usage:	Active three-point lap and shoulder belt used properly
Air bag:	Driver air bag, deployed as a result of the primary frontal impact

Occupant Injuries

No injuries were reported.

Occupant Kinematics

This was a relatively minor crash. At impact, the driver of the case vehicle was projected forward and slightly

right. There was likely a small amount of loading on the seat belt, but this would have been mitigated by the dr gripping the wheel while braking prior to the crash.

Scene Diagram

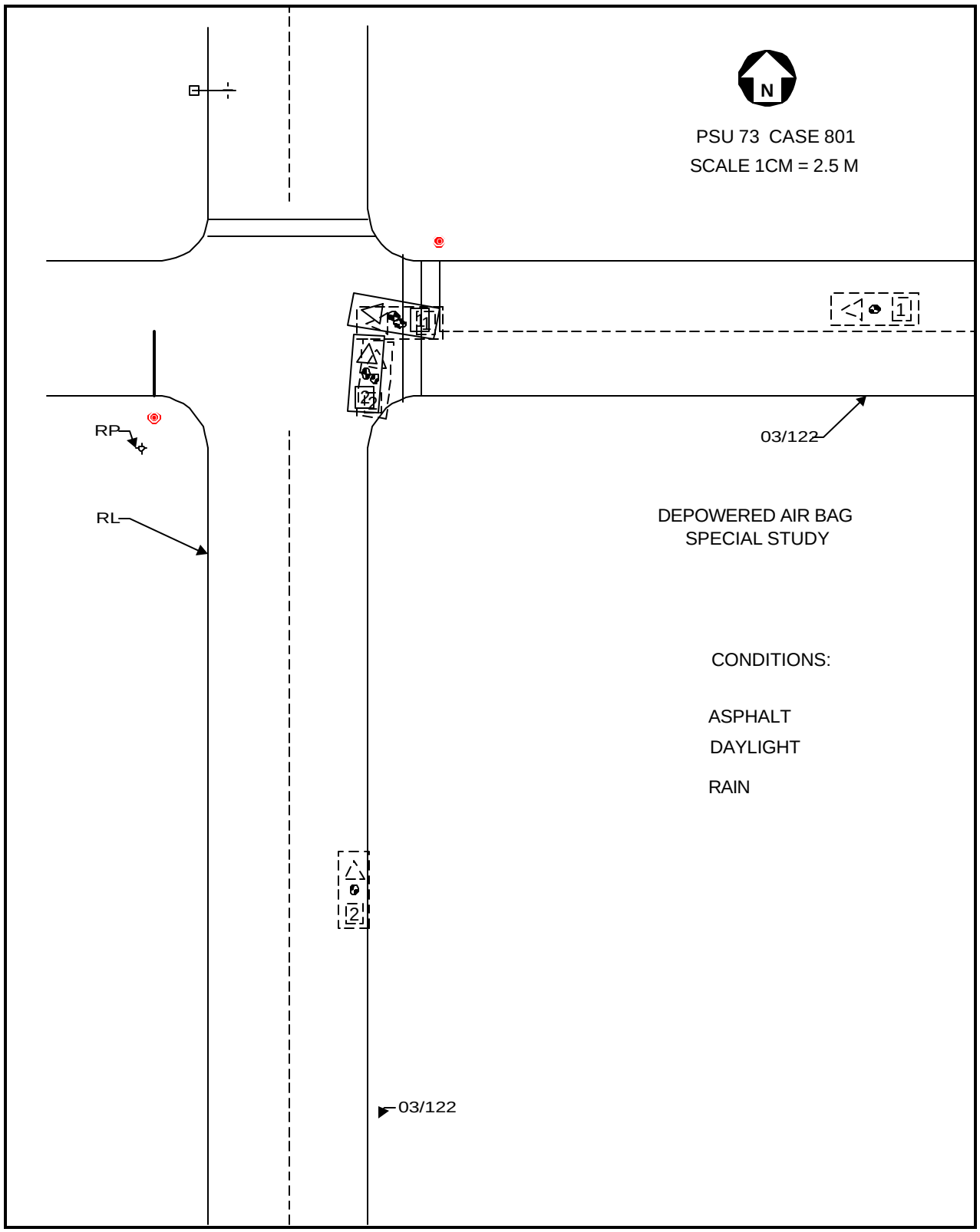

Figure 4. Scene Diagram