School Bus Crash Investigation
Dynamic Science, Inc.
Case 99010
Contract DTNH22-94-D27058
Task 131
Alabama
April, 1999

This research was supported by the National Highway Traffic Safety Administration (NHTSA), U.S. Department of Transportation. The opinions, findings, and recommendations contained herein are those of the authors, and do not necessarily represent those of NHTSA.

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.

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Background

This two vehicle collision involved two 1995 International Genesis 42 feet long school buses. This collision was selected for additional follow-up study do to the damages of the school buses involved. A remote-style investigation was conducted during which information was sought from the investigating police jurisdiction, and the bus owners (private). The date of the collision was mid September 1997 at 0700 hours. The weather was clear and the roadway was dry.

Summary

This crash involved two 1995 International Genesis 42 feet long yellow school buses. The exact configuration of the seats is unknown, but exemplar buses inspected by Dynamic Science, Inc had 76 passenger locations. The two buses (Vehicles 1 and 2) were owned by a private transit company. Vehicle 1 was being driven by a 34 year old female driver. Vehicle 2 was being driven by a 52 year old female driver. Both vehicles were being driven west at the posted speed limit of 64 Km/h (40 MPH), on a two lane roadway. As Vehicles 1 and 2 approached an intersection, a vehicle ahead of Vehicle 2, another school bus, stopped to allow a left turning vehicle to clear the intersection. This caused Vehicle 2 to come to a full stop and the driver of Vehicle 1 to lock up her brakes and impact the rear plane of Vehicle 2 with the full frontal plane of Vehicle 1. After the initial impact, Vehicle 1 went to the left and came to a stop in the east bound travel lane. Vehicle 2, after the impact, steered to the right and went around the original stopped non-contact vehicle, and came to a controlled stop on the north/south intersecting roadway.

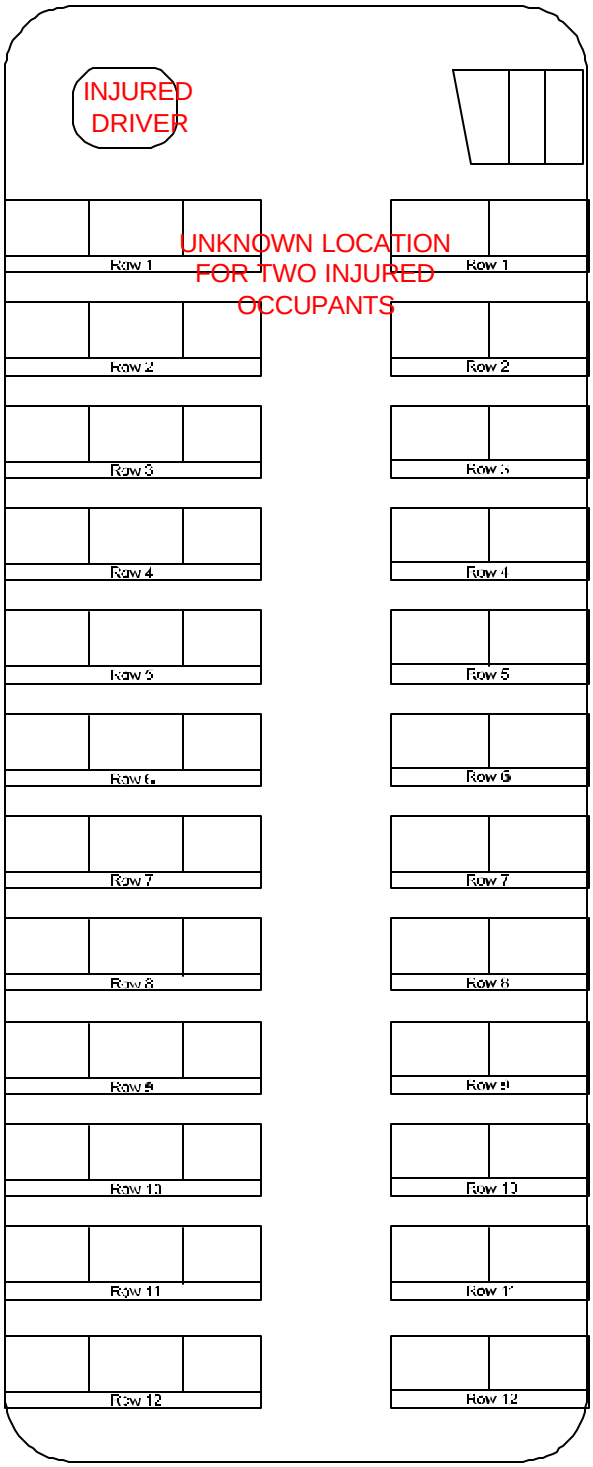
An exemplar school bus was photographed and measured. The seats were of the high back design 65 cm. (25.6 in.) above the seat cushion and at a 79.3 degree angle. The leading edge of the seat cushion was 42 cm. (16.5 in.) above the floor while the rear edge was 43 cm. (16.9 in.) above the floor. The angle of the seat cushion was 5.9 degrees while applying pressure to the measuring device. The lateral dimension of the seat cushion was 99 cm. (39 in.) on the left side, and 99 cm (39 in.) on the right. The seat cushion width was 39 cm. (15.4 in.). The distance between the seat back to seat back cushion was 58 cm (22.8 in.) The aisle width measured 31 cm. (12.2 in.)

It is unknown if either of the buses were equipped with restraints for each seating position. The driver's position had a 3-point manual lap and shoulder restraint. Both drivers of each of the school buses were restrained by the available lap/shoulder restraints.

Vehicle 1 was carrying two students at the time of the collision. The age and seating positions are unknown. One student was a female and the other was a male. Vehicle 2 had only the driver, and no student occupants.

Damage to Vehicle 1 included the front bumper, grill and front fascia, windshield, frame and front of the roof. The cost of repairs was estimated as $ 30,000 from the information received from the transit company. Damage to Vehicle 2 included the rear bumper, emergency exit door and body panels. The cost of repairs was not included in the information received from the transit company.

The driver of Vehicle 1 received visible injuries of an unknown type. She was entrapped by the wreckage and required some extrication. She was then transported to a regional hospital where she was admitted for treatment. The two students who were occupants of Vehicle 1 were transported to a regional hospital where they were treated and released.


INJURED
DRIVER
UNKNOWN LOCATION
FOR TWO INJURED
OCCUPANTS
Row 1
Row 1
Row 2
Row 2
Row 3
Row 3
Row 4
Row 4
Row 5
Row 5
Row 6
Row 6
Row 7
Row 7
Row 8
Row 8
Row 9
Row 9
Row 10
Row 10
Row 11
Row 11
Row 12
Row 12