School Bus Crash Investigation
Dynamic Science, Inc.
Case 99008
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 three vehicle collision involved two 1995 International Genesis 42 foot long school buses and a 1987 Chevrolet S-10 pickup truck. This collision was selected for additional follow-up study due 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 early March 1997 at 1435 hours. The weather was clear and the roadway was dry.

Summary

This crash involved two 1995 International Genesis 40 foot 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 31 year old male driver. Vehicle 2 was being driven by a 26 year old male. Vehicle 3, a 1987 Chevrolet S-10 pickup truck, was being driven by a 35 year old male. All vehicles were traveling northbound on a five lane, undivided roadway and were approaching a controlled intersection. Vehicle 3 came to a complete stop at the traffic light and Vehicle 2 stopped in line, just behind Vehicle 3. Vehicle 1, approaching at an estimated speed of 56 Km/h (35 MPH) attempted to apply his brakes in order to stop his vehicle. The driver reported that at first application the brake pedal seemed spongy. At the second application the driver reported that the brakes grabbed but it was too late and he impacted the rear plane of Vehicle 2 with the frontal plane of Vehicle 1. Vehicle 2, after being struck in the rear, was pushed forward into the rear plane of Vehicle 3.

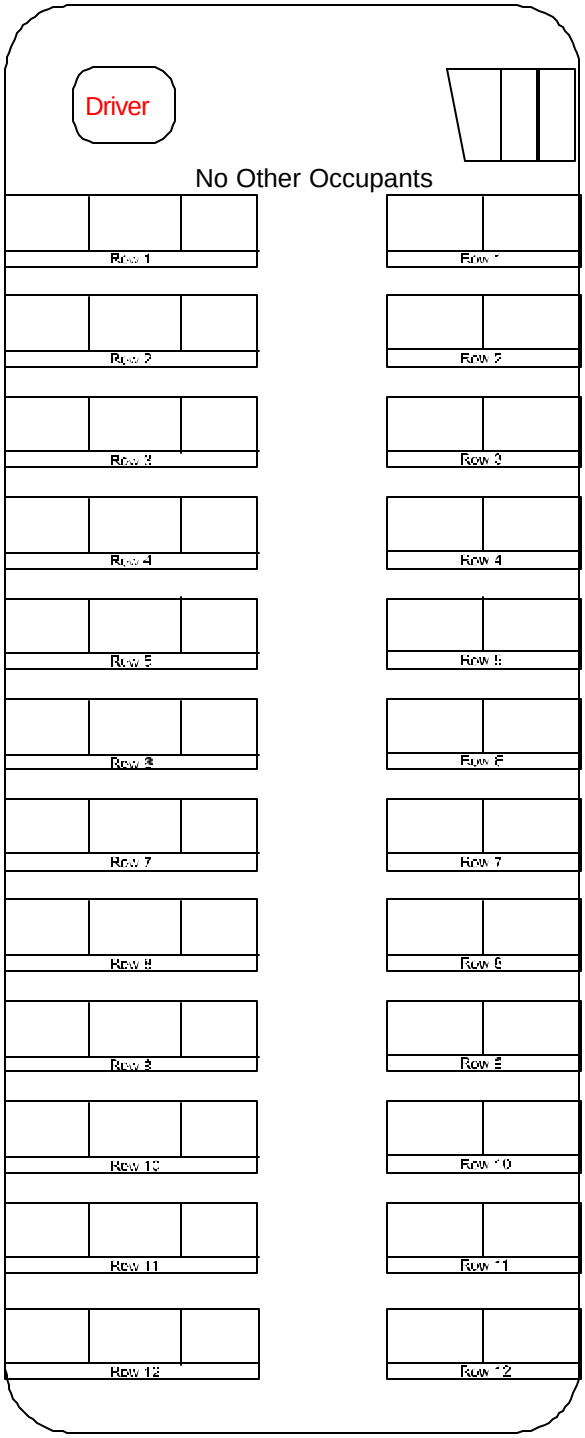
An exemplar school bus was photographed and measured. The seats were of the high back design 65 cm (25.6 in.) above the seat cushion and at a 79.3 degree angle. The leading edge of the seat cushion was 42 cm. (16.5 in.) above the floor while the rear edge was 43 cm. (16.9 in.) above the floor. The angle 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.

Vehicle 1 was not carrying any students at the time of the collision. Vehicle 2 had two occupants at the time of the impact, the driver and an aide, and Vehicle 3 had two occupants.

Damage to Vehicle 1 included the front bumper, grill and front fascia, windshield and front of the roof. The cost of repairs was not included in 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 damages to Vehicle 3 are unknown.

The driver of Vehicle 1 received a visible injury of an unknown type. He was transported to a regional hospital where he was treated and released. There were no other injuries.


Driver
No Other Occupants