



H-438 SP-20
Log #170

National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: September 2, 1986

In reply refer to: H-86-59 through -62

Honorable Diane Steed
Administrator
National Highway Traffic Safety
Administration
Washington, D.C. 20590

About 5:10 a.m. on October 20, 1984, a 1983 Ford pickup truck crossed the center line of U.S. Route 59, about 40 miles east of Laredo, Texas, and collided head-on with the left front of a westbound Transportation Enterprises, Inc., intercity charter tour bus. 1/ The bus, a 1982 Eagle Coach, was transporting a church group from Houston, Texas, to Nuevo Laredo, Mexico, and was following a second charter tour bus at an estimated 55 miles per hour. After impact, the bus continued about 140 feet before stopping, and the pickup truck caught fire. The busdriver, the pickup truck driver, and a truck passenger were killed. Toxicological tests of the truck driver's blood revealed a blood alcohol content (BAC) of .22 percent. Tests for the busdriver were negative. 2/

The Safety Board's investigation of this accident revealed a number of safety issues which have been addressed in the past by the Board and which indicate the need for action to improve passenger safety. The impact with the pickup truck destroyed the electrical circuits of the bus. As a result, the only light source for interior illumination for the bus passengers was burning fuel from the truck located to the left rear of the bus. Initially, some passengers escaped from the damaged bus through a fixed panel window that someone had kicked out. The main loading door was inoperative, and escape through the available side window emergency exits was delayed because the darkness made it difficult for passengers to locate the windows and to read the nearby emergency exit instructions. Several minutes after the collision, headlights from approaching vehicles provided intermittent illumination so passengers could identify and operate side window emergency exits.

1/ "Intercity bus" as referenced in this recommendation letter is defined as a for-hire bus that is more than 10,000 pounds gross vehicle weight rating and transports more than 20 passengers.

2/ Highway Field Report--"1982 Eagle Charter Coach Head-on Collision with 1983 Ford Pickup Truck, near Laredo, Texas, October 20, 1984" (NTSB-FTW-85-H-FR02).

The investigation also revealed a problem with the procedures for operating the side window emergency exits. At the time of manufacture, foil-faced, stick-on decals that identified the location and operation of each of the eight side window emergency exits were installed on the interior sidewalls as required by Federal Motor Vehicle Safety Standard (FMVSS) 217(5.5.1). However, at the time of the accident, only three exit windows were properly marked. Two exit windows did not have any type of markings on either the interior sidewall or the window sash, and a number of markings at other windows were disfigured due to wear and/or vandalism. Only two passenger seating areas not located directly below an exit window retained their markings indicating the location of the nearest available exit; these markings are required by FMVSS 217(5.5.2).

The interior sidewall of the bus, in the area between the passenger floor level and the bottom of the side windows, was covered by a plastic laminate material about 1/8 inch thick. As the bus structure collapsed and shifted due to impact forces, the laminate material shattered into pieces with knife-like edges. Several small pieces were propelled into the front area of the coach, and many of the pieces showed evidence of occupant contact. At least one exit window marking decal was displaced from its original position as the laminate material separated from the sidewall.

Passengers reported that, because of the difficulties in exiting the bus, all of the injured passengers were not evacuated until 30 to 45 minutes after the accident. The loading door at the right front of the bus was inoperative due to structural deformation, and passenger access to the front windshield opening was obstructed by interior damage and personal belongings. In addition, passengers were confronted with an exit-to-ground height of more than 7 feet. To jump or fall from this height could have resulted in injury. The absence of a locking device to hold open the exit windows hindered their use. Because the exit-to-ground height was too great to allow a person standing outside the coach to hold the windows in an open position, one passenger within the bus held the window open, thereby occupying space in the evacuation area and increasing the evacuation time.

As a result of its investigation of a bus accident in Sacramento, California, in 1973, 3/ the Safety Board recommended that the Federal Highway Administration (FHWA):

H-74-37

Establish regulations to facilitate evacuation of buses in an emergency. The incorporation of emergency lighting systems actuated through impact, and entry for rescuers should be included in the regulation. Attention is called to the Board's investigation of the interstate bus accident in Baker, California, in 1968, in which it was recommended that "No new type buses go into service which have not been tested to insure that all occupants can escape rapidly."

In a 1975 response to the Safety Board, the FHWA stated that in fiscal year 1976 the Bureau of Motor Carrier Safety would study the emergency lighting proposal to determine if such systems are available and the potential benefits as compared to the cost. A 1978 study funded by the FHWA concluded that not enough detailed information was collected on the 14 intercity bus accidents studied to assess the extent to which escape

3/ Highway Accident Report—"Greyhound Bus Collision with Concrete Overpass Support Column on I-80, San Juan Overpass, Sacramento, California, November 3, 1973" (NTSB-HAR 74-5).

was impeded by a dark environment. 4/ Because the FHWA has not taken any action on Safety Recommendation H-74-37, the Safety Board has placed the recommendation in a "Closed--Unacceptable Action" status.

The FHWA report also noted that windows hinged at the top can fall back on passengers impeding escape and producing injuries. The report states, "consideration should be given to requiring some mechanism for holding windows open once they are initially opened." As a result of its investigation of a bus accident in Petersburg, Indiana, in 1969, 5/ the Safety Board recommended that the National Highway Traffic Safety Administration (NHTSA):

H-71-37

Study the feasibility and practicality of a standard for passenger buses requiring that overhead surfaces which include roof linings, moldings, parcel or luggage shelves, edges, and support hardware be designed so as to reduce or prevent direct contact injuries in rollover or upset accidents, and that such areas resist separation or fracture of a type which would expose edges to passengers. Such protection is of particular importance in the absence of passenger restraints not currently required.

In its response letter of June 14, 1971, the NHTSA acknowledged the importance of redesigning the bus interior to mitigate occupant injuries during collisions and indicated support for the Safety Board's findings with regard to Safety Recommendation H-71-37. Despite this support, the NHTSA did not study the problem and, consequently, the Safety Board in an April 4, 1986, letter notified the NHTSA that Safety Recommendation H-71-37 has been classified as "Closed--Unacceptable Action." The Safety Board continues to believe that the capability for rapid emergency evacuation of intercity-type buses is essential and that bus interiors can be improved to mitigate occupant injuries in an accident.

Therefore, the National Transportation Safety Board recommends that the National Highway Traffic Safety Administration:

In conjunction with the Federal Highway Administration, adopt standards to require emergency interior lighting for intercity-type buses that is of sufficient intensity and duration to aid occupants in identifying available exit routes and to aid rescuers in assisting injured occupants. (Class II, Priority Action) (H-86-59)

Revise Federal Motor Vehicle Safety Standard 217 to require that the identification of and operating instructions for emergency exits on intercity-type buses be permanently attached to the buses. A stamped or engraved plaque attached to the sidewall structure with rivets or tamper-proof screws would be less susceptible to vandalism, aging, and fading. (Class II, Priority Action) (H-86-60)

Revise Federal Motor Vehicle Safety Standard 217 to require a locking mechanism that would hold open side window emergency exits on intercity-type buses during use. (Class II, Priority Action) (H-86-61)

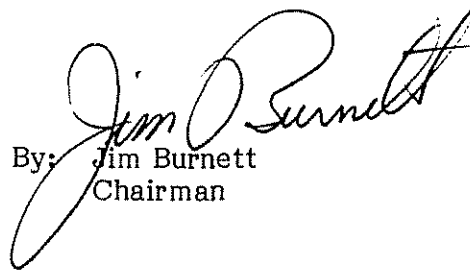
4/ Evacuation of Intercity Buses, U.S. Department of Transportation, Federal Highway Administration, January, 1978.

5/ Highway Accident Report—"Overturn of Greyhound Bus Lines, Inc., General Motors PD-4107 and Pontiac Bonneville Brougham, Petersburg, Indiana, November 24, 1969" (NTSB-HAR-71-4).

Develop a standard for intercity-type buses that requires overhead surfaces, which include roof linings, moldings, parcel or luggage shelves, edges, and support hardware, to be designed to reduce or prevent direct contact injuries in rollover and upset accidents, and that such areas resist separation or fracture of a type which would expose occupants to sharp edges. (Class II, Priority Action) (H-86-62)

Also as a result of its investigation of this accident, the Safety Board made Safety Recommendation H-86-63 to the Federal Highway Administration and H-86-64 to the American Bus Association.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and LAUBER and NALL, Members, concurred in these recommendations.


By: Jim Burnett
Chairman