Publications

NATIONAL TRANSPORTATION SAFETY BOARD
Public Meeting of July 8, 2008
(Information subject to editing)

Highway Accident Report
Motorcoach Override of Elevated Exit Ramp
Interstate 75
Atlanta, Georgia, March 2, 2007
NTSB/HAR-08/01

This is a synopsis from the Safety Board's report and does not include the Board's rationale for the conclusions, probable cause, and safety recommendations. Safety Board staff is currently making final revisions to the report from which the attached conclusions and safety recommendations have been extracted. The final report and pertinent safety recommendation letters will be distributed to recommendation recipients as soon as possible. The attached information is subject to further review and editing.

EXECUTIVE SUMMARY

About 5:38 a.m. eastern standard time on Friday, March 2, 2007, a 2000 VanHool T2145 57-passenger motorcoach operated by Executive Coach Luxury Travel, Inc., transporting 33 members of the Bluffton University baseball team, the driver, and his wife, was traveling south on Interstate 75 in Atlanta, Georgia. The motorcoach had departed from the university, about 60 miles southwest of Toledo, Ohio, about 7:00 p.m. the previous day and was en route to a competition in Sarasota, Florida. When the original driver had stopped in Adairsville, Georgia, approximately halfway through the 18-hour trip, the 65-year-old relief driver, accompanied by his wife, boarded the motorcoach and began driving at 4:30 a.m. to complete the trip to Florida. The relief driver had driven approximately 54 miles and, according to witnesses, was in the southbound high occupancy vehicle (HOV) lane at milepost 250 when the motorcoach departed the interstate, traveling at highway speed, onto the HOV-only left exit ramp to Northside Drive.

The exit ramp came to an end at the stop sign-controlled T-intersection with Northside Drive. As the motorcoach entered the intersection at an estimated speed of 50 to 60 mph, the driver steered to the right and collided with the reinforced portland cement concrete bridge wall and chain-link security fence located along the southern edge of the eastbound lanes of the overpass. The motorcoach then overrode the bridge rail, rotated clockwise, and fell 19 feet onto the southbound lanes of the interstate. The motorcoach came to rest on its left side (driver's side), perpendicular to the southbound lanes of Interstate 75. Two southbound passenger vehicles received minor damage from debris as the motorcoach fell onto Interstate 75; none of the passenger vehicle occupants were injured. Seven motorcoach occupants were killed: the driver, the driver's wife, and five passengers. Seven other passengers received serious injuries, and 21 passengers received minor injuries.

Major safety issues identified in this accident include inadequate HOV traffic control devices,

inadequate motor carrier driver oversight, lack of event data recorders on motorcoaches, and lack of motorcoach occupant protection. As a result of its investigation, the Safety Board makes recommendations to the Federal Highway Administration and to the Georgia Department of Transportation. The Safety Board also reiterates four recommendations to the National Highway Traffic Safety Administration.

CONCLUSIONS

1. The following factors neither caused nor contributed to the accident: the weather; the mechanical condition of the vehicle; the driver's qualifications and driving record; or driver impairment due to alcohol, illicit drugs, or narcotic pain medication.
2. The emergency response was timely and effective.
3. The Georgia Department of Transportation failed to identify the Northside Drive HOV-only left exit, which was in a left curve preceding a high-speed left interstate merge, as an unexpected arrangement that required additional traffic control devices to guide road users.
4. The Georgia Department of Transportation, in changing the original design plan by separating the Northside Drive HOV exit sign from the Interstate 75 South pull-through sign, caused the effective meaning of the paired signs to be lost at a critical decision point on the highway.
5. Positioning the Northside Drive HOV-only left exit direction sign next to the Interstate 75 South pull-through sign will promote positive guidance to motorists on the appropriate travel lanes at a critical decision point on the highway.
6. Because of the unique combination of geometric features and lane restrictions of an HOV-only left exit, redesigning the Northside Drive exit signs to include a message plaque with the legend LEFT in black on a yellow background placed at the top left edge of the 1 MILE and 1/2 MILE guide signs will better alert drivers to the unconventional exit design.
7. Because the Northside Drive exit ramp is short and terminates at a nonsignalized intersection, an advisory ramp speed sign is needed for motorist safety.
8. The use of yellow dashed lines for left exit pavement markings and white dashed lines for right exit pavement markings should be considered to emphasize and distinguish left exits.
9. Pairing an EXIT pavement marking with the HOV diamond pavement marking is a useful traffic control enhancement for all left HOV exits.
10. This accident illustrates the importance of HOV traffic control devices being sufficiently similar, regardless of their geographic location, to create consistent expectations related to common geometric, operational, and route characteristics.
11. The supplemental LEFT message plaques required by the Manual on Uniform Traffic Control Device's proposed standard should be phased in sooner than the typical 10-year compliance timeframe.
12. The investigation found no evidence of the driver being asleep or otherwise incapacitated prior to the accident.
13. Executive Coach Luxury Travel, Inc., inadequately monitored its drivers to determine their compliance with the *Federal Motor Carrier Safety Regulations* related to motorcoach operation.
14. Information on the acceleration time history (or crash pulses) critical to the evaluation of vehicle performance and occupant protection systems was unavailable to accident investigators and researchers because of the motorcoach's lack of an event data recorder.
15. Event data recorders would provide the accurate and detailed event data necessary to better understand crash causation and to establish design requirements for motorcoach crashworthiness and occupant protection systems.
16. Establishing event data recorder performance standards for motorcoaches and buses is necessary for the timely and efficient implementation of electronic data recorders, which will, in turn, provide the data needed to develop effective occupant protection systems.
17. Because of the National Highway Traffic Safety Administration's delay in defining motorcoach

occupant protection performance standards, U.S. motorcoaches have not been equipped with such systems, leaving the traveling public inadequately protected during motorcoach collisions, particularly during rollovers.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of this accident was the motorcoach driver's mistaking the HOV-only left exit ramp to Northside Drive for the southbound Interstate 75 HOV through lane. Contributing to the accident driver's route mistake was the failure of the Georgia Department of Transportation to install adequate traffic control devices to identify the separation and divergence of the Northside Drive HOV-only left exit ramp from the southbound Interstate 75 HOV through lane. Contributing to the severity of the accident was the motorcoach's lack of an adequate occupant protection system.

SAFETY RECOMMENDATIONS

As a result of its investigation of this accident, the National Transportation Safety Board makes the following recommendations:

To the Federal Highway Administration:

1. Include in a *Manual on Uniform Traffic Control Devices* standard the requirements for HOV-only left exits to have *LEFT* message plaques on all exit guide signs and for exit direction (arrow) signs to be positioned next to pull-through signs at exits with limited sight distance, short ramps, or multiple route choices. (H-08-XX)
2. Include in a *Manual on Uniform Traffic Control Devices* standard criteria for the use of advisory speed limit signs for all interstate exit ramps. (H-08-XX)
3. Evaluate the *Manual on Uniform Traffic Control Devices* standard for guide line marking requirements for interstate left exits. (H-08-XX)
4. Work with the National Committee on Uniform Traffic Control Devices to ensure that the next edition of the *Manual on Uniform Traffic Control Devices* is issued as scheduled in 2008 and that the revision comprehensively addresses the uniformity of HOV traffic control devices, including left exits. (H-08-XX)
5. Require a phase-in period of 5 years for supplemental LEFT message plaques in the standard proposed for the next edition of the *Manual on Uniform Traffic Control Devices*. (H-08-XX)

To the Georgia Department of Transportation:

6. Install a *LEFT* message plaque on the *1 MILE* and the *1/2 MILE* advance exit guide signs and on the directional arrow exit sign for Northside Drive and position the pull-through sign for the southbound Interstate 75 HOV through lane so that it is next to the Northside Drive left-exit direction sign. (H-08-XX)
7. Install exit signs with *LEFT* message plaques for left interstate exits. (H-08-XX)
8. Install pull-through signs next to the exit direction (arrow) signs to ensure positive route guidance at exits with limited sight distance, short ramps, or multiple route choices (H-08-XX).
9. Install an advisory speed limit sign (*Manual on Uniform Traffic Control Devices* W13-2) on the Northside Drive HOV exit ramp and on interstate left exit ramps throughout the State. (H-08-XX)
10. Add an EXIT pavement marking paired with the HOV diamond pavement marking at all left HOV interstate exits. (H-08-XX)

REITERATED RECOMMENDATIONS

The National Transportation Safety Board reiterates the following recommendations:

To the National Highway Traffic Safety Administration:

1. In 2 years, develop performance standards for motorcoach occupant protection systems that account for frontal impact collisions, side impact collisions, rear impact collisions, and rollovers. (H-99-47)
2. Once pertinent standards have been developed for motorcoach occupant protection systems, require newly manufactured motorcoaches to have an occupant crash protection system that meets the newly developed performance standards and retains passengers, including those in child safety restraint systems, within the seating compartment throughout the accident sequence for all accident scenarios. (H-99-48)
3. Require that all school buses and motorcoaches manufactured after January 1, 2003, be equipped with on-board recording systems that record vehicle parameters, including, at a minimum, lateral acceleration, longitudinal acceleration, vertical acceleration, heading, vehicle speed, engine speed, driver's seat belt status, braking input, steering input, gear selection, turn signal status (left/right), brake light status (on/off), head/tail light status (on/off), passenger door status (open/closed), emergency door status (open/closed), hazard light status (on/off), brake system status (normal/warning), and flashing red light status (on/off) (school buses only). For those buses so equipped, the following should also be recorded: status of additional seat belts, airbag deployment criteria, airbag deployment time, and airbag deployment energy. The on-board recording system should record data at a sampling rate that is sufficient to define vehicle dynamics and should be capable of preserving data in the event of a vehicle crash or an electrical power loss. In addition, the on-board recording system should be mounted to the bus body, not the chassis, to ensure that the data necessary for defining bus body motion are recorded. (H-99-53)
4. Develop and implement, in cooperation with other Government agencies and industry, standards for on-board recording of bus crash data that address, at a minimum, parameters to be recorded, data sampling rates, duration of recording, interface configurations, data storage format, incorporation of fleet management tools, fluid immersion survivability, impact shock survivability, crush and penetration survivability, fire survivability, independent power supply, and ability to accommodate future requirements and technological advances. (H-99-54)

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