



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

RM H-462

Date: February 5, 1986

In reply refer to: H-85-56 through -58

Mr. Norfleet Gardner, Director
Division of Transportation
State Board of Education
Room 389 - Education Building
Raleigh, North Carolina 27611

About 12:20 p.m. on March 13, 1985, an Ashe County School District schoolbus driven by a 17-year-old student driver and carrying 22 students, ages 16 and 17, was traveling up an 8-percent grade on eastbound State Route (SR) 88 near Jefferson, North Carolina, when it went off the right edge of the road in a left curve and crossed the grassy shoulder. The 1980 schoolbus then rolled one revolution to the right and down a steep embankment and came to rest upright 24 feet below the road surface against two trees. There was no fuel leakage or fire. It was daylight, the weather was clear, and the two-lane roadway was dry. One student was seriously injured, one sustained moderate injuries, and the other 20 had minor injuries; the schoolbus driver was not injured. None of the bus occupants were ejected from the schoolbus. 1/

The evidence indicates that a lack of passenger discipline was a factor in this accident. The schoolbus driver, the passengers, and the motorist who saw the schoolbus before the accident stated that some of the passengers were moving around on the bus while it was in motion. The schoolbus driver stated that he was distracted by a game that passengers were playing and that he was concerned about one of the passengers involved. Rather than stop the bus on the side of the road to establish order, the student schoolbus driver tried to drive and maintain discipline at the same time. First he verbally warned them to behave and then he tried to "sling" the students back into their seats. Finally, as he was watching the students in the rearview mirror, he drove off the side of the road.

The North Carolina "Handbook for School Bus Drivers" states that if there is a problem on the bus, the driver should pull to the side of the road and maintain order before continuing on. The student driver involved in the accident could have pulled over to the right shoulder at the intersection of SR 194 and SR 88 instead of attempting to "sling" the students back into their seats. He also could have pulled over to the right shoulder at the bottom of the hill on which the accident occurred or at any other location.

1/ For more detailed information, read Highway Accident Report--"Schoolbus Rollover, State Route 88, near Jefferson, North Carolina, March 13, 1985" (NTSB/HAR-85/05).

One possible explanation for the schoolbus driver's failure to maintain discipline was his age relative to the passengers. The 17-year-old bus driver, an adolescent, was charged with the responsibility of both driving the bus safely and maintaining order and discipline among passengers who were his peers.

The Safety Board has found that maintaining discipline on schoolbuses may be a serious distraction for adult schoolbus drivers as well as adolescent schoolbus drivers. For example, in its investigation of a Miami, Florida, schoolbus loss of control accident on September 28, 1983, 2/ the Safety Board found that "the driver (an adult) initiated a sudden steering maneuver when she was distracted, which caused the rear end of the bus to become unstable." The Safety Board determined that "Contributing to the accident was the busdriver's distraction from her driving duties by an unruly student passenger."

In the Safety Board's investigation of a schoolbus/freight train collision on April 12, 1984, in Carrsville, Virginia, 3/ documented evidence of student misbehavior was included in the Board's report along with reports from the bus driver's husband, friends, and co-workers that "the driver (an adult) was experiencing difficulty in keeping order among the elementary-school-aged children on her current route." The school principal reported that the driver in that accident had come to him at least once a week with disciplinary problems, and, in some cases, the driver had gone directly to the parents of some of the children on her route. Several passengers on the driver's route reported that "she stopped the bus almost daily to discipline the children." In that investigation, the Safety Board found that "the lack of student discipline on the bus was a problem and the noise level in the bus may have interfered with the driver's ability to hear the whistle of the approaching train."

A 1974 University of North Carolina report 4/ which analyzed schoolbus accidents in North Carolina for the 1971-1972 school year by driver age concluded that:

... there was a significant difference between drivers age 16 through 20 and those age 21 and older, with the younger drivers having a higher accident rate. However, it was further found that it was the 16-year-old drivers accounting for this high rate. There were no significant differences between the accident rates of drivers age 17 through 20 and those 21 and older. Because further analyses indicated that the poor performance of the 16-year-old driver is probably attributable to their inexperience, it is recommended that increased attention be given to the selection and training of these beginning drivers.

The report also recommended that school districts "license more schoolbus drivers at age 17 rather than at age 16, provided they have had a full year driving experience at that time."

2/ Highway Accident Report--"Schoolbus Loss of Control Accidents in Miami, Florida, September 28, 1983, and Birmingham, Alabama, April 12, 1984" (NTSB/HAR-85/03).

3/ Highway Accident Report--"Collision of Isle of Wight County, Virginia, Schoolbus with Chesapeake and Ohio Railway Company Freight Train, State Route 615 near Carrsville, Virginia, April 12, 1984" (NTSB/HAR-85/02).

4/ Judith McMichael, "School Bus Accidents and Driver Age," Highway Safety Research Center, University of North Carolina, December 1974.

5/ Robert B. Daniel, John H. Lacey, Beverly T. Orr, "Investigations of 61 School Bus Crashes in Three North Carolina Counties," Highway Safety Research Center, University of North Carolina, January 1980.

A 1980 University of North Carolina study of 61 schoolbus accidents in three North Carolina counties for the school years 1977 through 1979 5/ concluded that:

. . . driving left of center crashes involved high school age bus drivers exclusively. On a statewide basis, younger drivers are also overrepresented in this crash type, though not so dramatically. It is recommended that, during the more individualized on-the-road phase of initial training, younger drivers receive both special emphasis on the hazards of driving left of center and on ways to avoid doing so in potential conflict situations.

Finally, a 1982 report 6/ issued by the National Highway Traffic Safety Administration states that "Recent increases in schoolbus crashes and pupil fatalities attributed particularly to the 16- and 17-year-old schoolbus drivers have raised questions about continuing to employ them as schoolbus drivers." Several conclusions drawn in the report are listed below:

- o During the last 10 years, the States have decreased the use of 16- and 17-year-old schoolbus drivers by 6 percent.
- o Because the annual miles driven by 16- and 17-year-old drivers is nearly the same as the annual miles driven by 18-year-old and older drivers, exposure would not account for the difference in accident experience.
- o In the few States where they are employed, 16- and 17-year-old drivers have both more accidents per million miles and more accidents per driver than 18-year-old and older drivers.

Of the 25 Ashe County schoolbus accidents in the 1982-1984 school years, 15 involved drivers who were 16 or 17 years old. In 7 of the 15 accidents, the 16- and 17-year-old drivers were charged with a traffic violation. In 6 other accidents, the driver appeared to be at fault, but no charges were indicated on the accident report. In the 10 schoolbus accidents involving drivers 18 years old and above, 4 drivers were charged with violations and 3 drivers appeared to be at fault, but no charges were indicated. Although this is a small sample, adolescent schoolbus drivers (16 and 17 years old) in Ashe County seem to be at fault in more accidents or charged more often than older drivers.

On January 14, 1983, at 3:20 p.m. in Jacksonville, North Carolina, a 17-year-old student schoolbus driver was stopped at a grade crossing awaiting an approaching freight train when the driver decided to back the bus away from the tracks. She mistakenly put the schoolbus in forward gear instead of reverse, and the vehicle lunged forward into the path of the train. The left side of the schoolbus was struck broadside by the train injuring 32 of the 56 students.

A comparison was made of the proportion of schoolbus accidents in North Carolina to million miles driven for 16- and 17-year-old drivers and for 18-year-old and older drivers for each of the school years 1982-1983, 1983-1984, and 1984-1985. The accident rate per million miles for 16- and 17-year-old drivers was 12.7 for 1982-1983, 14.0 for

6/ David H. Soule, "The 16/17 Year Old School Bus Driver," Office of Driver and Pedestrian Safety, National Highway Traffic Safety Administration, U.S. Department of Transportation, April 1982.

1983-1984, and 13.2 for 1984-1985. The accident rate per million miles for 18-year-old and older drivers was 8.1, 10.0, and 9.2, respectively. The differences in accident rates per million miles are highly significant for all three years for the two age groups ($P < .0001$). ^{7/} In all 3 years, the 16- and 17-year-old schoolbus drivers had a statistically significant greater proportion of accidents per million miles than schoolbus drivers 18 years and older. ^{8/}

To learn whether the accident rates of 16- and 17-year-old schoolbus drivers experienced in North Carolina prevailed in other States, the Safety Board contacted the U.S. Department of Labor (DOL). Any State which employs 16- and 17-year-old schoolbus drivers must apply for an annual exemption from DOL "Hazardous Occupations Order No. 2," which became effective on September 10, 1968. The purpose of this child labor regulation is to raise the age of employment from 16 to 18 years in those occupations declared to be particularly hazardous.

Ten States have applied for exemption from the order. ^{9/} Nevada filed for the exemption, but lists no current 16- and 17-year-old schoolbus drivers. Alabama, Mississippi, South Carolina, and North Carolina employ the bulk of the adolescent student schoolbus drivers. These four States employ 7,733 adolescent student schoolbus drivers and 21,252 adult schoolbus drivers who drive a total of 72,072,061 and 192,447,139 annual miles, respectively. The adolescent student drivers in the four States attend the same schoolbus driver training program as the adult schoolbus drivers. For the 1983-1984 school year, there were 1,749 accidents involving 18-year-old and older schoolbus drivers and 1,161 accidents involving 16- and 17-year-old schoolbus drivers. The five other States (Wyoming, Oklahoma, Nebraska, Iowa, and Virginia) collectively list 98 adolescent student schoolbus drivers with 110 accidents reported for the 1983-1984 school year.

A comparison, based on the difference of proportions test using the Z statistic, was made of the accident rate per million miles driven for the two age groups for the combination of the four States. The number of accidents per million miles driven in the four States is 16.1 for 16- and 17-year-old drivers and 9.1 for drivers 18 years and older. The difference in accident rates per million miles driven by age group is highly significant ($P < .0001$).

Based on the accident experience of 16- and 17-years old schoolbus drivers in North Carolina, South Carolina, and Alabama, and the results of previous North Carolina reports and studies, the Safety Board believes that these three States should discontinue the practice of hiring 16- and 17-year-old schoolbus drivers.

^{7/} $P < .0001$ -- Probability is less than 1 in 10,000 that the differences observed could have been obtained by chance alone.

^{8/} These results were corroborated by a comparison of the number of schoolbus accidents by driver age for the two age groups. The proportion (or the ratio) of accidents for the 16- and 17-year-old group to the total number of 16- and 17-year-old schoolbus drivers was 0.108 for 1982-1983, 0.121 for 1983-1984, and 0.108 for 1984-1985. The proportion of accidents for the 18-year-old and older group to the total number of 18-year-old and older drivers was 0.069 for 1982-1983, 0.086 for 1983-1984, and 0.082 for 1984-1985. The difference in the proportion of accidents between the age groups was 0.039 for 1982-1983, 0.035 for 1983-1984, and 0.026 for 1984-1985. The difference in the proportion of accidents per driver for the two age groups for the 3 years tested is highly significant statistically.

^{9/} U.S. Department of Labor, Employment Standards Administration, Wage and Hour Division, "Accident Data on Schoolbus Drivers Annual Report" 1983-1984.

Therefore, as a result of its investigation of this accident, the National Transportation Safety Board recommends that the State Director of Pupil Transportation of North Carolina:

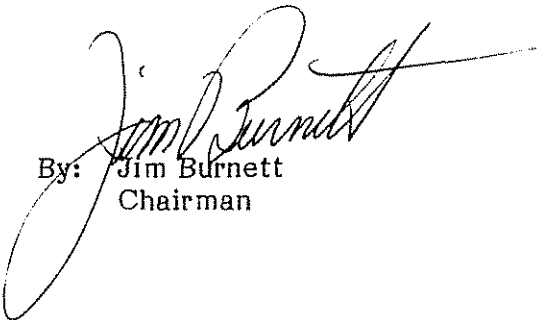
Discontinue the practice of hiring 16- and 17-year-old schoolbus drivers. (Class II, Priority Action) (H-85-56)

As an interim measure, take steps to correct passenger discipline problems being encountered by current schoolbus drivers under 18 years of age. (Class II, Priority Action) (H-85-57)

Ensure that local school districts in the State of North Carolina comply with the Federal guidelines in Highway Safety Program Standard 17, "Pupil Transportation Safety," which suggests that "one emergency evacuation drill should be held during the first week of school each semester" and that "at least twice during each school year, each pupil who is transported in a school vehicle shall be instructed in safe riding practices." (Class II, Priority Action) (H-85-58)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "...to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations H-85-56 through -58 in your reply.

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

By: 
Chairman

Log H-461



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: February 5, 1986
In reply refer to: H-85-56

Mr. Ralph M. Hendrix, Director
Office of Transportation
Room 512 - Rutledge Building
1429 Senate Street
Columbia, South Carolina 29201

Norman N. Loper, Coordinator
Pupil Transportation
304 Dexter Avenue Room 4A
Montgomery, Alabama 36130

About 12:20 p.m. on March 13, 1985, an Ashe County School District schoolbus driven by a 17-year-old student driver and carrying 22 students, ages 16 and 17, was traveling up an 8-percent grade on eastbound State Route (SR) 88 near Jefferson, North Carolina, when it went off the right edge of the road in a left curve and crossed the grassy shoulder. The 1980 schoolbus then rolled one revolution to the right and down a steep embankment and came to rest upright 24 feet below the road surface against two trees. There was no fuel leakage or fire. It was daylight, the weather was clear, and the two-lane roadway was dry. One student was seriously injured, one sustained moderate injuries, and the other 20 had minor injuries; the schoolbus driver was not injured. None of the bus occupants were ejected from the schoolbus. 1/

The evidence indicates that a lack of passenger discipline was a factor in this accident. The schoolbus driver, the passengers, and the motorist who saw the schoolbus before the accident stated that some of the passengers were moving around on the bus while it was in motion. The schoolbus driver stated that he was distracted by a game that passengers were playing and that he was concerned about one of the passengers involved. Rather than stop the bus on the side of the road to establish order, the student schoolbus driver tried to drive and maintain discipline at the same time. First he verbally warned them to behave and then he tried to "sling" the students back into their seats. Finally, as he was watching the students in the rearview mirror, he drove off the side of the road.

One possible explanation for the schoolbus driver's failure to maintain discipline was his age relative to the passengers. The 17-year-old bus driver, an adolescent, was charged with the responsibility of both driving the bus safely and maintaining order and discipline among passengers who were his peers.

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per million miles are highly significant for all 3 years for the two age groups ($P < .0001$). 7/ In all 3 years, the 16- and 17-year-old schoolbus drivers had a statistically significant greater proportion of accidents per million miles than schoolbus drivers 18 years and older. 8/

To learn whether the accident rates of 16- and 17-year-old schoolbus drivers experienced in North Carolina prevailed in other States, the Safety Board contacted the U.S. Department of Labor (DOL). Any State which employs 16- and 17-year-old schoolbus drivers must apply for an annual exemption from DOL "Hazardous Occupations Order No. 2," which became effective on September 10, 1968. The purpose of this child labor regulation is to raise the age of employment from 16 to 18 years in those occupations declared to be particularly hazardous.

Ten States have applied for exemption from the order. 9/ Nevada filed for the exemption, but lists no current 16- and 17-year-old schoolbus drivers. Alabama, Mississippi, South Carolina, and North Carolina employ the bulk of the adolescent student schoolbus drivers. These four States employ 7,733 adolescent student schoolbus drivers and 21,252 adult schoolbus drivers who drive a total of 72,072,061 and 192,447,139 annual miles, respectively. The adolescent student drivers in the four States attend the same schoolbus driver training program as the adult schoolbus drivers. For the 1983-1984 school year, there were 1,749 accidents involving 18-year-old and older schoolbus drivers and 1,161 accidents involving 16- and 17-year-old schoolbus drivers. The five other States (Wyoming, Oklahoma, Nebraska, Iowa, and Virginia) collectively list 98 adolescent student schoolbus drivers with 110 accidents reported for the 1983-1984 school year.

A comparison, based on the difference of proportions test using the Z statistic, was made of the accident rate per million miles driven for the two age groups for the combination of the four States. The number of accidents per million miles driven in the four States is 16.1 for 16- and 17-year-old drivers and 9.1 for drivers 18 years and older. The difference in accident rates per million miles driven by age group is highly significant statistically ($P < .0001$). The State of Alabama lists seventy 16- and 17-year-old schoolbus drivers who drove 49,163 activity trip miles and 651,510 regular route miles in the 1983-1984 school year. The Safety Board has investigated many activity trip accidents and believes that the amount of activity trip miles driven by the inexperienced 16- and 17-year-old schoolbus drivers in Alabama is extremely high. The Safety Board also believes that the amount of regular route miles driven by the inexperienced 16- and 17-year-old schoolbus drivers in South Carolina is high.

7/ $P < .0001$ -- Probability is less than 1 in 10,000 that the differences observed could have been obtained by chance alone.

8/ These results were corroborated by a comparison of the number of schoolbus accidents by driver age for the two age groups. The proportion (or the ratio) of accidents for the 16- and 17-year-old group to the total number of 16- and 17-year-old schoolbus drivers was 0.108 for 1982-1983, 0.121 for 1983-1984, and 0.108 for 1984-1985. The proportion of accidents for the 18-year-old and older group to the total number of 18-year-old and older drivers was 0.069 for 1982-1983, 0.086 for 1983-1984, and 0.082 for 1984-1985. The difference in the proportion of accidents between the age groups was 0.039 for 1982-1983, 0.035 for 1983-1984, and 0.026 for 1984-1985. The difference in the proportion of accidents per driver for the two age groups for the 3 years tested is highly significant statistically.

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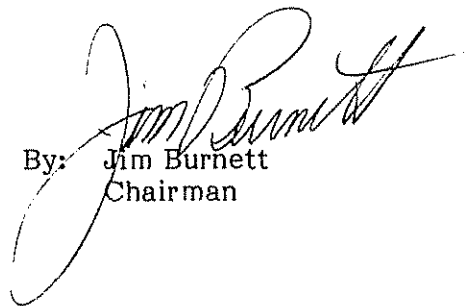
Based on the accident experience of 16- and 17-year-old schoolbus drivers in North Carolina, South Carolina, and Alabama, and the results of previous North Carolina reports and studies, the Safety Board believes that these three States should discontinue the practice of hiring 16- and 17-year-old schoolbus drivers.

Therefore, as a result of its investigation, the National Transportation Safety Board recommends that the States of Alabama and South Carolina:

Discontinue the practice of hiring 16- and 17-year-old schoolbus drivers. (Class II, Priority Action) (H-85-56)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "...to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation H-85-56 in your reply.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and LAUBER, Member, concurred in this recommendation.

By:  Jim Burnett
Chairman

