

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

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H-322

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Forwarded to:

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P. O. Box 1850
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SAFETY RECOMMENDATION(S)

H-82-10

About 2:40 p.m., c.d.t., on October 12, 1981, a truck tractor-pole semitrailer, laden with sixteen 75- to 80-foot pine logs was southbound on U.S. Route 45, about 1 mile south of Waynesboro, Mississippi. A schoolbus occupied by the driver and 49 students was also southbound following behind the truck. As the truck approached Industrial Park Road, it moved into a right turn lane, decelerated, and initiated a 125° right turn. The overlength logs swung leftward across the southbound through-traffic lane and into the path of the overtaking schoolbus. The schoolbus struck the swinging logs, traveled forward to the right, struck the extreme front end of an eastbound automobile, which was stopped on Industrial Park Road at the intersection, and then struck and overrode a utility pole in the southwest quadrant of the intersection. Three bus passengers were killed and 18 bus passengers and the driver were injured. 1/

In the area of the accident, U.S. Route 45 is a 23-foot-wide, two-lane highway traversing a rural, residential area. The highway was originally built in 1922 and paved to a 20-foot width in 1939. In 1970, the highway was widened and overlaid to a 24-foot width. The right turn lane was constructed in 1977 with a clay gravel surface and in 1978 was paved. U.S. Route 45 was overlaid in 1979, including the right turn lane. Pavement markings were included on this project. The right turn lane was constructed at the request of Waynesboro city officials, Wayne County officials, and members of the Industrial Park Road Board to help traffic conditions at the intersection. The right turn lane is 11 feet 9 inches wide, and extends about 400 feet north from the intersection pavement flanges. The angle between Industrial Park Road and the north leg of U.S. Route 45 is 55°.

Approaching the intersection from the north, U.S. Route 45 has a grade of 0.77 percent positive to the south and a typical crown of 0.01-foot per foot. Pavement striping consists of solid white edge lines along both edges of the pavement and a single broken yellow center stripe. There is no break in the west edgeline for the turn lane and no lines at the west edge of the turn lane.

1/ For more detailed information, read Highway Accident Report—"Herman Duvall Tractor-Pole Semitrailer/S. L. & B Academy, Inc., Schoolbus Collision, U.S. Route 45, near Waynesboro, Mississippi, October 12, 1981" (NTSB-HAR-82-2).

The speed limit on U.S. Route 45 through Waynesboro is 30 mph. The speed limit changes to 45 mph for 0.3 mile, then to 55 mph at the Waynesboro corporate limits. A State law restricts schoolbus speeds to 45 mph. The 55-mph sign, which was 1 mile north of Industrial Park Road, was the last regulatory or warning sign posted on U.S. Route 45 approaching the intersection from the north at the time of the accident.

The Safety Board contacted the Mississippi Department of Highways about its policy on signing and pavement striping on approaches to intersections. According to the representatives, if the sight distance to the intersection is less than 1,000 feet, advance warning signs are erected and center line skip striping is carried through the intersection. Edge lines (if provided for the highway) are stopped on either side of the intersection. "No passing zones" are provided if the highway alignment requires; however, "no passing zones" are not provided solely for the intersection. The Manual on Uniform Traffic Control Devices (MUTCD) has been adopted for use in the State of Mississippi by both the Commissioner of Public Safety and the State Highway Commission. The absence of signing near the intersection and no passing zones complies with the MUTCD insofar as signing at intersections where no special hazard exists is concerned. Traffic entering U.S. 45 from Industrial Park Road or the gravel road is controlled by stop signs.

Traffic counts taken in 1980 show an average daily traffic (ADT) of 5,680 vehicles for the area of the highway south of Waynesboro and north of the Industrial Park Road intersection, and an ADT of 5,110 vehicles south of the intersection. No counts of vehicles turning at the intersection have been made, but observations made by the Mississippi State Highway Department indicate there are a large number of vehicles, particularly southbound vehicles, turning during peak traffic hours (6:30 a.m. to 8:30 a.m., and 4:00 p.m. to 6:00 p.m.). The traffic counts do not distinguish the numbers of automobiles and trucks. One official at the sawmill estimated that about 125 trucks per working day enter the sawmill from the U.S. 45 - Industrial Park Road intersection.

As the truck tractor was being turned from a southeast direction to a west direction, the pole semitrailer wheels slowed to a near stop (with respect to the original direction) and virtually pivoted before continuing on the new direction. The rear bolster on the semitrailer was mounted midway between the No. 4 and No. 5 axles. This meant that the rear bolster served as a pivot point for the logs while the truck was being turned. Since the truck was in a right turn maneuver, that portion of the logs aft of the rear bolster would swing in the opposite direction toward the travel lanes on U.S. Route 45. The 11.75-foot-wide right turn lane was not sufficient to permit much lateral movement before the rear ends of the logs protruded into the southerly travel lanes. The more extensive the overhang, the greater the protrusion.

In view of the number of truckdrivers and other motorists who stopped during the survey of the intersection conducted by Safety Board investigators to allow one or the other to clear the intersection, it appears that many of the drivers traveling through the intersection were aware of the potential hazard and took appropriate defensive action. However, if a driver is not familiar with the displacement of the ends of logs overhanging the rear of logging trucks while turning, or if a driver is momentarily distracted, there is little time to take any avoidance action, and as a result the potential for an accident is greatly increased. In this accident, the schoolbus driver had about 2 seconds to react from the time the left rear corner of the logs protruded beyond the west edgeline of the travel lane until impact.

The Safety Board concludes that the truckdriver's failure to ascertain the close proximity of the schoolbus, the busdriver's incomplete attention to the driving task, and the 37-foot rear overhang from the semitrailer's rear bolster were factors which contributed to this accident. Similar accidents at the intersection probably have been averted by the alertness and defensive driving tactics of the truckdrivers and other highway users. The Safety Board encourages defensive driving practices, but believes that the situation existing at the intersection demands a higher degree of defensive driving than can reasonably be expected. There are two primary reasons for this: (1) the lack of warning or information input to drivers not familiar with the potential hazards; and (2) the inordinate potential for accidents if a driver is momentarily distracted or inattentive. The geometrics of the intersection are such that when log trucks with extensive rear overhang are making a right turn from U.S. Route 45 onto Industrial Park Road there is no margin for error. The Safety Board believes that those agencies responsible for the highway transportation system should assure, either through design or regulation, a reasonable margin of safety to accommodate such movement.

While the policy of the Mississippi State Highway Commission is in accord with the MUTCD recommendations for signing on intersection approaches where no special hazards or unusual conditions exist, the Safety Board believes that is not the situation at the intersection of U.S. Route 45 and Industrial Park Road. One estimate indicated that about 125 trucks hauling forest products turn at that intersection each work day. The Board believes that trucks with overhanging logs turning at this intersection 125 times per day constitutes a special hazard or unusual condition.

Section 2C-1 of the MUTCD states, in part, that: "Warning signs are used when it is deemed necessary to warn traffic of existing or potentially hazardous conditions on or adjacent to a highway or street. . . . Adequate warnings are of great assistance to the vehicle operator and are valuable in safe-guarding and expediting traffic." The MUTCD further provides that, on rural highways, warning signs should be placed about 750 feet in advance of the hazard or condition. On high speed roads, the MUTCD recommends advance warning distances as great as 1,500 feet.

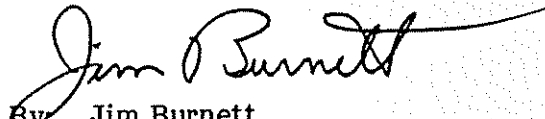
Although the busdriver had driven through the intersection numerous times, she said that she was not aware of the potential hazard associated with the displacement of overhanging logs on turning trucks and therefore did not take the necessary precautions to avert conflict with the logs as they moved into the travel lane occupied by the schoolbus. If warning signs and special striping had been placed on the pavement to denote the danger zone, the busdriver may have previously noticed the signs and markings and may have been aware that the presence of a log-hauling truck posed a potential hazard. The MUTCD states: "warning signs are primarily for the protection of the driver who is unacquainted with the road. . . ." The concept also applies to drivers who are unacquainted with transient conditions, whether familiar with the road or not. Foreknowledge of the potential hazard could have caused the busdriver to be more attentive to the logging truck and to have taken precautions which would have averted the accident.

The Safety Board believes that potentially hazardous conditions frequently exist at this intersection, albeit transient and intermittent in nature, which warrant the placement of warning signs as recommended by the MUTCD and special highway pavement markings to denote the zone of potentially imminent danger. Another possible action to eliminate the hazard associated with overhanging logs protruding into the travel lane would be the construction of a wider turning lane at the intersection.

Therefore, as a result of its investigation of this accident, the National Transportation Safety Board recommends that the Mississippi Department of Highways:

Install appropriate advance warning signs to alert motorists of the potential hazard from turning trucks loaded with logs or other objects with extensive rear overhang at the intersection of U.S. Route 45 and Industrial Park Road and at all other intersections within the State of Mississippi where a similar hazard may exist. (Class II, Priority Action) (H-82-10)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS and BURSLEY, Members, concurred in this recommendation.


By: Jim Burnett
Chairman