

AI-4

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 23, 1981

Forwarded to:

Honorable Edmund G. Brown, Jr.
Governor
State of California
Sacramento, California 95814

SAFETY RECOMMENDATION(S)

H-81-28 through -30

About 7:25 a.m., on November 10, 1980, southbound traffic on Interstate 15 suddenly encountered dense fog north of the Highland Avenue offramp near San Bernardino, California, that reduced visibility to between zero and 50 feet. Drivers, whose vehicles were traveling 55 mph on the well-maintained, eight-lane, divided freeway, said the visibility obscurement was immediate and unexpected. Some drivers slowed their vehicles partially as they entered the fogbank and others did not. A tractor-trailer combination vehicle braked suddenly to avoid a small car that changed lanes in front of it, and a pickup truck struck the trailer from the rear. This initiated a chain of collisions that involved at least 24 vehicles over a period of 5 to 10 minutes within a distance of 450 feet and resulted in 7 fatalities, 17 injuries, and extensive damage to all vehicles. 1/

The accident occurred during daylight about 1 hour after sunrise at an elevation of about 1,500 feet above mean sea level. The temperature was about 45° to 50° F with variable wind speeds of less than 5 knots. Fog was reported at airports near the accident site by certified weather observers. At Ontario, California, about 9 miles southwest of the accident site, obscured skies and surface visibility of zero were reported at 6:45 a.m., and surface visibility of 1/8 mile was reported at 7:47 a.m. At Riverside, California, about 13 miles south of the accident site, the visibility varied from 1/16 mile at 6:45 a.m. to 1/8 mile at 7:45 a.m. Norton Air Force Base, 15 miles east of the accident site, reported partially obscured skies with a visibility of 1 1/2 miles at 6:38 a.m. About 1 hour later, the visibility was reported at 1/16 mile.

According to a National Weather Service (NWS) meteorologist, general fog areas can be forecast; however, forecasts of the density of fog for specific areas cannot be made. An NWS forecast for the San Bernardino Valley, issued at 4:30 a.m. on November 10, called for "dense fog or low clouds for the San Bernardino Valley in the morning." This forecast was distributed to local radio and television stations and newspapers. It could have been monitored by the California Highway Patrol (CHP).

1/ For more detailed information, read Highway Accident Report--"Multiple-Vehicle Collisions and Fire in Fog, Interstate 15, near San Bernardino, California, November 10, 1980" (NTSB-HAR-81-2).

Personnel at the Telecommunications Unit of the California Department of Transportation (Caltrans) stated that weather information is received by teletype from the NWS from the end of November through April or May. They also stated that reports of fog conditions are transmitted to Caltrans by the CHP in the local Sacramento area but are not received from units farther south. The information received is passed along to the Caltrans employees. It was stated that one of the main concerns of Caltrans is winter highway closures in the mountains due to snow. A Caltrans recording of current road conditions can be accessed by telephone from San Bernardino. Information on wind, snow, and fog as they relate to road conditions is included in the recording. However, fog conditions are referred to infrequently in the recorded message because their unpredictability has resulted in the recording of misleading fog condition information in the past.

The CHP stated that, although snow and road conditions are reported to the CHP by Caltrans, information on fog conditions is not. Weather information from either the NWS or a private weather forecasting service is not monitored by the CHP Headquarters in San Bernardino. The CHP reported that it does not have a fog alert program in the San Bernardino area because, while fog is a common occurrence in the area, dense fog does not occur frequently.

The State of California has demonstrated its concern for the hazards presented by limited-visibility conditions such as fog. Although there is no fog alert program for the San Bernardino area, in several areas the State has developed and implemented programs for "adverse weather and road conditions." These programs include: (1) problem area identification and evaluation; (2) fog forecasting and alert procedures; (3) route selection; (4) public education "Sig Alert" or Traffic Advisories; (5) use of engineering support for signing, striping, and barricades; (6) training of supervisors and officers; (7) traffic controls; and (8) "round robin" escort services. Such a program was used successfully in the Riverside area in 1975.

The State should identify other areas having a high potential for experiencing adverse weather conditions (fog, snow, sand, or dust storms, etc.) that may seriously affect major highway routes and/or traffic corridors and should develop contingency plans in those areas for warning and/or guiding traffic through affected areas, redeploying personnel resources, and notifying other government agencies should weather conditions reach the plan implementation threshold. With the high potential for fog problems in the San Bernardino area, given its proximity to the Riverside and Pomona areas which have severe fog and dust problems, a fog plan would be beneficial even if fog is only an occasional problem. It would be better to have a written plan that can be referred to rather than no plan at all.

In addition, the CHP should extend its practice of monitoring the NWS or local or regional weather forecasting services regularly (every 4 to 6 hours or more frequently if appropriate) to obtain advance notification of weather changes that may seriously affect traffic movement and provide adequate leadtime for implementing contingency plans.

One of the vehicles involved in the accident was a combination of a 1974 Peterbilt three-axle tractor towing a 1979 Alloy two-axle, flatbed semitrailer. The tractor was equipped with an aluminum headerboard installed 1 1/2 feet behind the cab. The semitrailer was equipped with a 4-foot-high plywood headerboard. The flatbed semitrailer was loaded with aluminum sheets of assorted sizes with an estimated weight of 46,000 pounds. The aluminum sheets were palletized, but the pallets were not tied down within the trailer side rails.

The truck combination entered the fog area following a tractor pulling a van semitrailer. The driver estimated his speed at 55 mph. As he first recognized the denseness of the fog, he heard a call on his CB radio to "shut it down" and at the same time saw the brakelights illuminate on the vehicle ahead. He locked up his brakes but hit a pickup truck and then ran into the rear of the van semitrailer. The cargo of sheet aluminum surged forward, crushed the headerboard of the semitrailer, and after being partially deflected by the headerboard of the tractor, penetrated the right side of the cab. Although injured, the truckdriver was able to exit the cab and crawl under his semitrailer to the right shoulder of the road.

Federal Motor Carrier Safety Regulation (FMCSR) 393.106, "Front End Structure," requires that every cargo-carrying motor vehicle be equipped with a headerboard or similar device of sufficient strength to prevent cargo shifting and penetration or crushing of the driver compartment. FMCSR 393.102, "Securement Systems," establishes requirements for the prevention of cargo shifting during transit. Subsection (b), "Tiedown Assemblies," requires that the static breaking strength of the tiedown assemblies (chains, cables, steel straps, or fiber webbing) used to secure an article against movement in any direction must be at least 1 1/2 times the weight of the article. FMCSR 393.104, "Blocking and Bracing," requires that cargo not firmly braced against a front-end structure be secured so that when the vehicle decelerates at the rate of 20 feet per second, the cargo will remain with the vehicle and not penetrate the vehicle's front end structure. This is the equivalent of the forces exerted during a locked-wheel stop. FMCSR 393.100C(4), "Miscellaneous Metal Articles," states that an article must be secured by at least one tiedown assembly over its top for at least every 8 feet of its length and at least two tiedown assemblies securing each individual article or combination of articles (pallets and sheets) banded or otherwise secured together and handled as a single unit. This section applies to all metals, which according to the BMCS includes aluminum.

Title 13, Subchapter 7, "Loading Regulations," of the California State Administrative Code has tiedown requirements for steel cargo but not for aluminum cargo. Article 7 of the code is titled "Steel Plate, Sheet, and Tinplate." Section 1360 of Article 7 states: "This article shall apply to the highway transportation of flat steel products (plate, sheet, and tinplate) . . ." Section 1362, "General Provisions," states: "The following general provisions shall apply to the transportation of steel plate, sheet steel, and tinplate." Section 1364, "Securement of Lifts," refers to "lifts of sheet steel." And finally, Section 1365, "Stacking of Lifts," applies to ". . . lifts of steel plate, sheet steel, and tinplate." Nowhere does the code mention "aluminum" in any form.

The shift of the sheet aluminum was possible because the palletized aluminum sheets were not secured to the trailer. The headerboard was not capable of retaining the forward surge of the cargo because the vehicle, in striking the rear end of a loaded trailer, developed a deceleration rate and force that exceeded the headerboard's design specifications. If the palletized sheet aluminum had been tied down as required by FMCSR 393.100C(4), the combined strength of the tiedowns and the headerboard might have retained the cargo. The State of California should evaluate accidents involving vehicles transporting loads of aluminum and other metal products to determine if such accidents and any attendant injuries could be prevented or their severity reduced by requiring such loads to meet the securement requirements for steel products contained in Title 13, Subchapter 7, of the California Administrative Code.

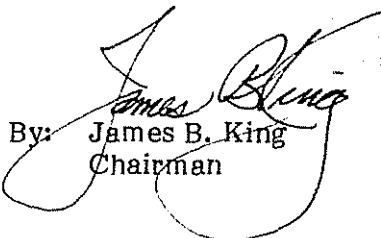
Therefore, the National Transportation Safety Board recommends that the State of California:

Encourage the California Highway Patrol to extend its communication facilities throughout the State and to monitor National Weather Service or local or regional weather forecasting services regularly to obtain advance warning of weather changes that may seriously affect traffic movement and to provide adequate leadtime for implementing contingency plans. (Class II, Priority Action) (H-81-28)

Identify areas throughout the State having a high potential for experiencing adverse weather conditions (fog, snow, sand, or dust storms, etc.) that may seriously affect major highway routes and/or traffic corridors. Develop contingency plans similar to the Riverside plan for those areas to warn and to guide traffic through affected areas, to redeploy personnel resources, and to notify other government agencies should weather conditions reach the plan implementation threshold. (Class II, Priority Action) (H-81-29)

Evaluate accidents involving vehicles transporting loads of aluminum and other metal products to determine if such accidents and any attendant injuries could be prevented or their severity reduced by requiring such products to be secured so as to meet the securement requirements for steel products contained in Title 13 of the California Administrative Code. (Class II, Priority Action) (H-81-30)

DRIVER, Vice Chairman, and McADAMS and BURSLEY, Members, concurred in these recommendations. KING, Chairman, and GOLDMAN, Member, did not participate.


By: James B. King
Chairman