

SP-20

Log R-512

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 3, 1985

Forwarded to:

Honorable Elizabeth Hanford Dole
Secretary
Department of Transportation
Washington, D. C. 20590

SAFETY RECOMMENDATION(S)

R-85-24

About 1:00 a.m., on Thursday, June 14, 1984, Burlington Northern Railroad Company freight trains Extra 6760 West and Extra 7907 East collided head-on on the single track main line near Motley, Minnesota. The trains were being operated on dispatcher-issued train orders, in nonsignallized territory. The westbound train had been traveling about 35 to 40 mph and the eastbound train about 45 to 49 mph just before the emergency applications of the automatic air brakes of both trains. The accident resulted in three fatalities, one serious injury, and three minor injuries; damages were estimated at \$3,931,146. The dispatcher controlling the movement of the trains had been promoted to dispatcher recently before the accident and was working in his second tour of duty in that position. The dispatcher had been promoted from a stenographic/clerical position after having been nominated to and completing a company training program; he had no prior operating experience. 1/

The operating crews of trains Extra 7907 East and Extra 6760 West were qualified for their respective positions in accordance with BN requirements. There were no mechanical defects found that would have contributed to the accident. Further, there were no defects noted in the track structure that would have contributed to the accident.

The dispatcher's issuance of Train Order No. 85 to train Extra 7907 East from Staples to Carlton when trains Extra 2560 West and Extra 6760 West still were occupying the single track main line gave all three trains authority to occupy the same track. None of the crewmembers of any of the three trains with this overlapping authority was notified by the dispatcher of their status. Trains Extra 7907 East and local freight train Extra 2560 West had overlapping authority for 24 minutes; trains Extra 7907 East and Extra 6760 West had overlapping authority for 1 hour 14 minutes.

1/ For more detailed information, read Railroad Accident Report--"Head-On Collision of Burlington Northern Railroad Freight Trains Extra 6760 West and Extra 7907 East, Near Motley, Minnesota, June 14, 1984" (NTSB-RAR-85/06).

The engineer and head brakeman of train Extra 7907 East, and the engineer of train Extra 6760 West died as a result of injuries sustained during the accident. The head brakeman of train Extra 6760 West sustained serious injuries as a result of jumping from the moving train immediately before the head-on collision.

The engineer of train No. Extra 7907 East died as a result of traumatic burns and blunt trauma injuries. The head brakeman of train Extra 7907 East died as a result of massive epidural (brain) hemorrhage, lacerations of the right lung, multiple compound fractures, and third-degree and fourth-degree burns. The engineer of train Extra 6760 West died as a result of massive impact traumatic injuries and burns. The head brakeman of train Extra 6760 West suffered a shattered left kneecap, multiple fractures of the left hand and wrist, and cuts and bruises. Three of the four rear-end crewmembers of the trains received minor injuries in the accident.

Toxicological analysis of the dispatcher on-duty at the time of the accident did not indicate the presence of alcohol or drugs. That dispatcher's supervisor was not toxicologically tested. Neither blood nor tissue samples were obtained from the engineer of train Extra 6760 West, because of the extreme severity of the thermal injuries which destroyed most of the tissue. The body of the engineer of train Extra 7907 East was located about 39 hours after the accident, and the body of the head brakeman was located about 16 hours after the accident; both were buried beneath the coal ejected from the derailed coal-laden hopper cars. Toxicological analyses of blood specimens of the engineer by two separate laboratories indicated blood alcohol concentrations (BAC) of 0.13 percent and 0.138 percent, while a urine sample tested negative; analyses of blood and tissue specimens of the head brakeman indicated alcohol levels ranging from 0.012 percent for tissue specimens to 0.225 percent for blood specimens. Acetaldehyde was also detected in the specimen samples from both the engineer and the head brakeman. Specimen samples were analyzed separately by the Armed Forces Institute of Pathology (AFIP) and by the Minnesota Bureau of Criminal Apprehension (BCA). No evidence of use of any other controlled substance was indicated in the specimens. The AFIP informed the Safety Board that the presence of acetaldehyde "...indicates that bacterial contamination or tissue decomposition may have occurred." The toxicologist who performed the toxicological analysis at the BCA informed the Safety Board on August 22, 1984, that, regarding the analytical results for both the engineer and the head brakeman, in "...my opinion, that the majority, if not all of the alcohol that was found in the blood, is from bacterial decomposition..." There is a lack of clinical data regarding postmortem alcohol generation.

The rear-end crewmembers and the surviving head-end brakeman submitted to urinalysis testing for alcohol and drugs, which provided negative results. No evidence was developed during the investigation to indicate that any of the crewmembers had ingested alcoholic beverages while at Staples. Further, the investigation indicated that the locomotive engineer of train Extra 7907 East was known not to be a user of alcoholic beverages.

Since the investigation developed no evidence of alcohol ingestion by the crewmembers, the locomotive engineer of train Extra 7907 East was a non-drinker, and expert toxicological opinion indicated that all of the alcohol could have been accounted for by postmortem decomposition, the Safety Board concluded that alcohol was not a causal factor in this accident. The length of time between the accident and the recovery of the bodies of the crewmembers killed in this accident suggests that decomposition was the source of the detected alcohol levels. The Safety Board is concerned that other

railroad accidents may occur wherein the circumstances of such accidents will not be as clearly indicative of whether alcohol ingestion is a factor in such accidents. The Safety Board believes that research to establish valid measurements of postmortem generation of alcohol is necessary, in view of drug and alcohol regulations proposed by the FRA which are supported wholeheartedly by the Safety Board. The FRA set forth a Notice of Proposed Rulemaking (NPRM), Docket No. RSOR-6, Notice No. 4, published June 12, 1984, regarding Federal Safety Standards for the Control of Alcohol and Drug Use in Railroad Operations. The Safety Board is concerned that the application of postaccident testing requirements may be a problem in railroad accidents where the recovery of toxicological specimens is delayed. The Safety Board believes that the Department of Transportation (DOT) will need to address the lack of clinical data on postmortem alcohol generation, and urges the DOT to initiate necessary research to this end. However, the Safety Board does not view such research as a prerequisite to the implementation of the FRA's rules regarding use of alcohol and/or drugs in railroad operations.

Further, in its comments to the FRA concerning the NPRM, the Safety Board advised the FRA that:

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Although the Safety Board recognizes the difficult task of defining railroad employees who would be covered under this rule, we believe FRA should include all employees directly involved in an accident. This may well mean that employees other than "covered employees" under the Hours-of-Service Act need to be tested. For example, if the traincrew reported to a supervisor who did not detect alcohol there may be a need to test that supervisor.

- a. There are varying interpretations by railroads as to who is covered by the Hours of Service Act (45 USC 61-64b). The definition in subparagraph 218.101(b) should be explicitly defined as to "covered employees." For example, some railroads do not consider their operating department officials to be covered by the act.

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While the Safety Board has no reason to believe the dispatcher's supervisor was impaired, it must be noted that the supervisor was not toxicologically tested although all other employees involved in the accident were tested. The Safety Board strongly urges the FRA to take these circumstances into account in adopting the proposed rule.

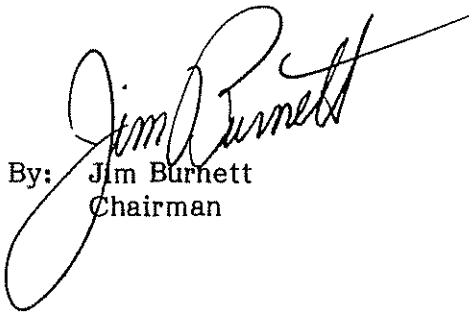
Further, the Safety Board has investigated numerous general aviation accidents over the years in which the subject of postmortem generation of alcohol has been an issue. There is, in cases in which the bodies may not have been recovered for several hours or days or in which the toxicological samples were not properly preserved, the possibility of putrefaction, and postmortem generation of alcohol precludes conclusive findings regarding the role that alcohol may play in the accident causes. Without corroborative evidence that a pilot actually consumed alcohol prior to or during the flight, alcohol-involvement in the accident cause cannot necessarily be determined based solely on the toxicological results.

Although the Safety Board has not encountered similar difficulties in investigations of other modes of transportation besides railroad and general aviation, the need for research to resolve this matter is apparent and would have complete intermodal applications. The Safety Board believes that the scientific community should be able to develop a reliable means to determine definitely whether a positive test for alcohol is the result of actual consumption of alcohol, the result of postmortem generation of alcohol, or a combination of both, and determine how much is due to each source.

Therefore, the National Transportation Safety Board recommends that the Department of Transportation:

Initiate research designed to expand the clinical base of knowledge regarding the postmortem generation of alcohol levels due to microbial action in order to relate that knowledge to postaccident toxicological testing requirements for the investigation of transportation accidents.
(Class II, Priority Action) (R-85-24)

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

By: 
Jim Burnett
Chairman