



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: April 25, 2007

In reply refer to: R-07-6

Honorable Edwin G. Foulke, Jr.
Assistant Secretary of Labor
for Occupational Safety and Health
U.S. Department of Labor
Occupational Safety and Health Administration
200 Constitution Avenue, N.W.
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The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses the need for procedures ensuring that railroads, States, and communities conduct joint emergency response planning for hazardous material releases. The recommendation is derived from the Safety Board's investigation of the July 10, 2005, collision of two CN freight trains in Anding, Mississippi,¹ and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued eight safety recommendations, one of which is addressed to the Occupational Safety and Health Administration (OSHA). Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

On Sunday, July 10, 2005, about 4:15 a.m., central daylight time, two CN freight trains collided head on in Anding, Mississippi. The collision occurred on the CN Yazoo Subdivision, where the trains were being operated under a centralized traffic control signal system on single track. Signal data indicated that the northbound train, IC² 1013 North, continued past a *stop* (red) signal at North Anding and collided with the southbound train, IC 1023 South, about 1/4 mile beyond the signal. The collision resulted in the derailment of 6 locomotives and 17 cars. About 15,000 gallons of diesel fuel were released from the locomotives and resulted in a fire that burned for about 15 hours. Two crewmembers were on each train; all four were killed. As a precaution, about 100 Anding residents were evacuated; they did not report any injuries. Property

¹ For additional information, see National Transportation Safety Board, *Collision of Two CN Freight Trains, Anding, Mississippi, July 10, 2005*, Railroad Accident Report NTSB RAR-07/01 (Washington, DC: NTSB, 2007).

² IC were the initials of the Illinois Central Railroad, which was acquired by the CN in 1999.

damages exceeded \$9.5 million; clearing and environmental cleanup costs totaled about \$616,800.

The National Transportation Safety Board determined that the probable cause of the July 10, 2005, collision in Anding, Mississippi, was the failure by the crew of the northbound train (IC 1013 North) to comply with wayside signals requiring them to stop at North Anding. The crew's attention to the signals was most likely reduced by fatigue; however, due to the lack of a locomotive cab voice recorder or the availability of other supporting evidence, other factors cannot be ruled out. Contributing to the accident was the absence of a positive train control system that would have stopped the northbound train before it exceeded its authorized limits. Also contributing to the accident was the lack of an alerter on the lead locomotive that may have prompted the crew to be more attentive to their operation of the train.

Availability of Train Consist Information

As a result of the collision, derailment, and fire, all four crewmembers were killed, and all six locomotives and both on-board train consist documents were destroyed. When emergency response personnel arrived on the accident scene, about 4:41 a.m., it was dark; the fire was intense; and heavy black smoke prevented them from visually identifying all the hazardous materials tank cars in the wreckage. When the first CN official arrived, about 5:25 a.m., he told emergency responders that he believed two CN trains had collided, but he did not have any train consist documents or knowledge about the hazardous materials on either train.

Diesel fuel was the cause of the fire in this accident. The limited release of hazardous materials from venting tank cars did not contribute to the severity of the accident. However, the lack of immediately available train consists prevented emergency responders from making a quick assessment of the potential for a hazardous materials release. Train consist documents are a vital source of information for emergency responders when they are trying to determine what hazardous materials might be involved in a derailment. It is essential that the information contained in these documents accurately reflect the current position of each railcar containing a hazardous material. Not having an accurate train consist makes it difficult for emergency responders to properly assess and manage an accident scene. Because the consist for the southbound train was never updated in the CN central computer system, the only up-to-date consist was the on-board document that was destroyed in the accident. The Safety Board concludes that because the CN did not have the capability to provide an accurate consist for the southbound train after the on-board document was destroyed, emergency responders were unable to promptly identify all the hazardous materials cars involved in the accident and timely assess the threat from a hazardous materials release.

Emergency Planning and Preparedness

Effective emergency planning is an issue that has been addressed by the Safety Board as a result of several railroad accidents dating to the mid-1980s. Most recently, after the Texarkana, Arkansas, accident³ that occurred in 2005, the Board found that the lack of emergency planning,

³ National Transportation Safety Board, *Collision of Two Union Pacific Railroad Freight Trains, Texarkana, Arkansas, October 15, 2005*, Railroad Accident Brief NTSB/RAB-06/04 (Washington, DC: NTSB, 2006).

particularly joint training exercises and drills, left the city of Texarkana and the Union Pacific Railroad ill-prepared to effectively respond to the accident. As a result, the Board issued the following recommendation to the International Association of Fire Chiefs:

I-06-2

Notify your members about the circumstances of the accident in Texarkana, Arkansas, on October 15, 2005, and urge them to coordinate with all regional and local transporters of hazardous materials, such as railroads and trucking companies, to establish effective communications and coordination through joint emergency response drills and exercises.

The Safety Board has investigated a number of rail accidents in which the coordination of response efforts between the railroads and local communities needed improvement. The issue surrounding the lack of a timely delivery of accurate train consist information that emerged after the accident in Anding has also been a recurring problem. Train crews carry an on-board document reflecting the current position of each railcar transporting a hazardous material in a train. The accident at Anding demonstrates that accurate train consists may not be available if the on-board documents are destroyed in an accident. Also, the death or injury of crewmembers may prevent or hinder emergency response personnel from accessing accurate consist information in a timely manner. The Board has made safety recommendations to the Pipeline and Hazardous Materials Safety Administration (PHMSA) and the Federal Railroad Administration to address this issue. The Board has long advocated joint drills and exercises between the railroads and local communities as measures to improve their respective emergency response efforts.⁴

State and local community emergency planning for hazardous materials incidents occurs largely through the Hazardous Materials and Emergency Preparedness (HMEP) grant program administered by PHMSA through the National Response Team (NRT). The HMEP program was established with the intent of enhancing State and local hazardous materials emergency planning and training by providing local communities with the necessary resources and tools to develop plans, training programs, drills, and exercises.

OSHA requires that railroads must develop and implement a hazardous materials emergency response plan in accordance with the provisions of 29 *Code of Federal Regulations* 1910.120. However, the regulations address only the structure and content of an emergency plan by requiring that the plans cover 11 areas of concern, including “pre-emergency planning and coordination with outside parties” and “critique of response and follow-up.” The regulations do not include any additional standards or instructions about how to evaluate the effectiveness of an emergency plan through drills and exercises with “outside parties.” Appendix C of the OSHA regulations states that an employer “should assure” that its emergency plan is compatible with the established local plan and further notes that the major reference used to develop local emergency plans is the *Hazardous Materials Emergency Planning Guide*, the NRT-1. OSHA does not oversee or review any of these emergency plans, but rather relies upon employers to

⁴ According to the CN, from 2003 through 2006, the CN participated in 256 tabletop exercises or mock disaster drills within the United States. Of this number, 55 were conducted in Mississippi and 2 of those exercises and/or drills took place in Yazoo City.

certify their own plans. Railroads are not specifically required under OSHA regulations to coordinate with communities about hazardous materials emergency planning.

Nevertheless, through their respective industry associations, transporters, including the railroads, and shippers of hazardous materials have made efforts to reach out to communities through programs, such as Transportation Community Awareness and Emergency Response (TRANSCAER),⁵ to enhance community awareness about the transportation of hazardous materials. TRANSCAER workshops typically provide a 1-day course to the local emergency planning committees consisting of familiarization with a cargo tank and its components and an exercise involving a simulated chemical release and practice using various containment techniques to plug or patch a leak on a cargo tank or railcar. Although TRANSCAER workshops provide valuable training for local emergency responders, the workshops alone do not provide the level of effective planning that is needed between the railroads and local communities.

It is the Safety Board's position that effective emergency planning between railroads and local communities should foster the voluntary exchange of emergency response plans, the maintenance of the plans by all parties, and the evaluation of the plans' effectiveness. Further, effective planning demands that the railroads and local communities jointly organize and participate in drills and exercises as a way of becoming familiar with each other's plans and as a means of testing the plans' overall effectiveness. Currently, PHMSA's HMEP program and OSHA's regulations provide parallel but independent processes for developing and implementing emergency response plans. Although PHMSA and OSHA are both members of the NRT emergency preparedness committee, more can be done to integrate local community emergency response and railroad emergency planning, including verification that local jurisdictions and railroads are conducting joint drills and exercises. Consequently, the Safety Board concludes that there are no mechanisms in place to verify that local jurisdictions that receive HMEP grant funds and railroads are conducting effective emergency planning for hazardous material releases resulting from rail accidents.

As interagency partners on the NRT Training and Curriculum Subcommittee, PHMSA and OSHA could better coordinate to ensure that more effective emergency planning occurs. For example, under the HMEP program, grants could be awarded on the condition that local communities be required to conduct joint training exercises and drills with railroads and other transporters of hazardous materials operating in their communities. OSHA also could strengthen its regulations to require and then verify that railroads are coordinating with local communities. PHMSA and OSHA also could jointly endeavor to specify in the NRT-1 emergency planning guidance that local communities and railroads conduct joint training drills and exercises.

Therefore, the National Transportation Safety Board makes the following recommendation to the Occupational Safety and Health Administration:

⁵ TRANSCAER is an outreach program intended for the hazardous materials transportation industry to work with local emergency planning committees and provide unique hands-on training using actual transportation equipment. TRANSCAER develops training tools, helps participants establish relationships with industry contacts and emergency responders, and conducts numerous training events. TRANSCAER sponsors include the American Chemistry Council; the American Association of Railroads; the Chemical Educational Foundation; the CHEMical TRansportation Emergency Center (CHEMTREC®); The Chlorine Institute, Inc.; and the National Tank Truck Carriers, Inc.

Require and verify that railroads transporting hazardous materials participate in joint training exercises and drills with the States, regions, or communities in which they operate as a means of evaluating the railroads' emergency hazardous materials response plans. (R-07-6)

The Safety Board also issued safety recommendations to the Federal Railroad Administration, the Pipeline and Hazardous Materials Safety Administration, the CN, and all Class I railroads. In your response to the recommendation in this letter, please refer to Safety Recommendation R-07-6. If you need additional information, you may call (202) 314-6177.

Chairman ROSENKER, Vice Chairman SUMWALT, and Member CHEALANDER concurred in this recommendation. Members HERSMAN and HIGGINS disapproved and filed the following concurring and dissenting statements.

[Original Signed]

By: Mark V. Rosenker
Chairman

Notation 7870**Member Hersman, Concurring in part and Dissenting in part:**

While I supported adoption of this report, I do not support the issuance of Recommendations 5 and 6.

Recommendation 5 to the Pipeline and Hazardous Materials Safety Administration (PHMSA) recommends that the agency require and verify that States and their communities that receive funds through the Hazardous Materials and Emergency Preparedness (HMEP) grant program conduct training exercises and drills with the joint participation of railroads and other transporters of hazardous materials operating within their jurisdictions. I do not believe the circumstances of this accident make the case for this recommendation for the following reasons:

- There is no information in this report that describes any HMEP grants to the State of Mississippi or the Bentonia Volunteer Fire Department.
- The community did conduct an exercise prior to the accident. On March 17, 2004, Yazoo County conducted a tabletop exercise with the CN and 20 different emergency response groups including the county's Emergency Incident Planning Committee.
- The emergency response in this accident was appropriate. The problem with the post-accident response in this accident was the railroad's failure to provide responders with an accurate consist. Despite this deficiency, the responders worked around the problem and prevented additional loss of life and damage to property. Their response was timely, effective and appropriate. The issue of providing accurate consists is appropriately addressed in Recommendation 2 to the Federal Railroad Administration and Recommendation 4 to PHMSA.

Additionally, I do not believe our recommendation is appropriate because the established purposes for expenditures of HMEP funds are not limited to conducting training exercises and drills. Grant recipients may find it more beneficial to use their allocation of funds to train emergency responders in hazmat awareness and recognition or for emergency circumstances other than rail accidents and tank car releases.

Similarly, I do not believe that Recommendation 6 to the Occupational Safety and Health Administration (OSHA) is justified. OSHA's mission and regulatory scheme are focused on protecting employees in their work place. While it is true that OSHA has a regulation (29 CFR 1910.120) requiring railroads to have an emergency response plan, OSHA does not require drills (joint or otherwise) and, according to this report, does not "oversee or review" any of the response plans. I believe it is unreasonable to expect that OSHA, which currently relies on employers to certify their own emergency response plans, will nevertheless require railroads to conduct joint response drills for the benefit of

communities. Again, the community response to this accident was appropriate. The breakdown was in securing an accurate train consist from the railroad, an issue that is more effectively addressed by other recommendations in this report.

Deborah A. P. Hersman
March 23, 2007

Notation 7870A**Member Kathryn O’Leary Higgins, Concurring in part and Dissenting in part:**

I concur with the findings, probable cause, and all but one recommendation in this report on our investigation of the tragic head-on collision between two CN freight trains in Anding, Mississippi. However, I believe the probable cause should have been more specific in one area, and I believe we should reiterate one recommendation to the Federal Railroad Administration (FRA).

Our findings and our probable cause list fatigue as a likely reason that the crew of the northbound CN train failed to heed the wayside signals that required them to stop at North Anding. That failure resulted in the head-on collision that killed four crew members from both trains. While we indicate fatigue as a likely factor in this accident the probable cause does not mention the reason the crew may have been fatigued. The report and staff presentation at the Board meeting implicate the schedule the crew worked as the likely reason for fatigue. I believe crew scheduling practices should have been identified as contributing to crew fatigue.

This crew worked 11-1/2 hour days, 6 days a week for 18 months prior to the accident. Their work “day” typically began at 10:30 p.m. when they were called and told to report for duty at midnight. They were on duty for the next 11 plus hours, often finishing just before noon. That almost 12 hour schedule did not take into account their travel time to and from the job. One crew member commuted an hour each way, adding to the length of his day.

There were positive features to this schedule. It was predictable and regular – the crew knew when they would be called. The schedule allowed them to be home every night and sleep in their own beds. They were used to this demanding routine and bid this schedule. This was an experienced crew. They were veterans with a good record. And while this is the schedule they bid, we don’t know what the alternatives were. This crew seemed to use their limited free time well. But the work schedule did not allow them enough time for restorative sleep. They typically slept five to five and a half hours a night.

Experts suggest that adults need a minimum of six to eight hours of uninterrupted sleep to be fully rested. CN’s scheduling practices are better than those of many other railroads and for that they should be commended. But just because CN work schedules are better than those of their competitors doesn’t mean they are good enough. Scheduling practices that allow crews to work up to 12 hours shifts, starting at midnight, for six days straight ignore the likely impact that schedule has on the crews and ultimately on public safety.

I recognize that the FRA does not currently have the authority to regulate work schedules. I am pleased that they are seeking this authority from Congress. I recognize that the crews voluntarily chose this schedule but question what choices they had. I

recognize that changing crew scheduling practices has staffing implications and, therefore, cost implications for the railroads. The rules governing crew scheduling were formulated at the beginning of the 20th century, almost 100 years ago. This is the 21st century. Surely it's time to modernize and update these practices. Surely it's time to learn from the research that has been done on the effects of fatigue on human performance. Just because the rules do not currently set limits on the hours that crews can work doesn't mean that limits shouldn't be voluntarily agreed to when it's in the best interest of the workers and public safety. I am convinced that railroads working with their unions, can still find a way to be profitable and implement 21st century scheduling practices. CN has taken important steps to regularize crew schedules. I hope they will consider going further and that other railroads will follow.

As a result of our investigation and report on the train accident in Macdona, Texas, on June 28,2004, we determined that the probable cause of the collision was UP crew fatigue that resulted in the failure of the engineer and conductor to appropriately respond to wayside signals governing the movement of their train. Contributing to the crewmembers' fatigue was their failure to obtain sufficient restorative rest prior to reporting for duty because of their ineffective use of off-duty time and Union Pacific Railroad train crew scheduling practices, which inverted the crewmembers' work/rest periods. Three persons, including the conductor of the UP train and two local residents, died as a result of inhalation of chlorine gas that escaped from a punctured car and then engulfed the area. The UP train engineer, 23 civilians, and 6 emergency responders were treated for respiratory distress or other injuries related to the collision and derailment.

This serious accident prompted the Board to issue recommendation R-06-14 to FRA, which states: Require railroad to use scientifically based principles when assigning work schedules for train crewmembers, which consider factors that impact sleep needs, to reduce the effects of fatigue. That recommendation is every bit as important in addressing the schedule worked by the Anding crew that very likely led to their fatigue. For that reason, I asked the Board to reiterate this recommendation to the FRA. The Board declined to do so because it has been less than a year since this recommendation was issued and FRA seems to be taking affirmative steps to seek authority to address regulate work schedules. While I understand that is our traditional response, I disagree. Fatigue is on our Most Wanted list. It is a problem that plagues all modes of transportation, including the rail industry. I think it is important to use every opportunity to restate our concern and our recommendations to address that critical issue..

I also disagree with the Board's recommendation to the Occupational Safety and Health Administration (OSHA) to require and verify that railroads transporting hazardous materials participate in joint training exercises and drills with the communities through which they travel to evaluate emergency hazardous materials response plans. I fully concur with the goal of this recommendation, but do not support sending this recommendation to OSHA.

OSHA's principal job is to protect workers. The current regulatory requirement governing hazardous substances has to do with protecting workers whose jobs bring them

in contact with such substances or who may be involved in clean up after a hazardous materials incident. Those plans to protect workers are to be shared by employers with the communities where they operate. While railroads, as employers, are covered by OSHA, they are not singled out or treated differently from any other employer when it comes to handling hazardous materials. Our recommendation asks OSHA to make a special rule for railroads regarding joint training exercises and drills with communities where the railroads operate. I don't believe that is OSHA's job nor do I believe they can or will effectively implement this recommendation.

I do believe it is the job of the Department of Transportation, PHMSA, FRA, and the National Response Team to require that railroads work closely with states and communities to ensure adequate planning and preparation for hazardous materials events. That planning and preparation should include regular drills and exercises. In fact, the guidelines for states and communities authored by the National Response Team, recommends just such practices. All the agencies mentioned above participate as members of the National Response Team. The real question is who should be held accountable for making sure the plans are implemented and tested when it comes to railroads. I think that is the job of the National Response Team and the Department of Transportation, not the Department of Labor and OSHA.

Kathryn O'Leary Higgins
March 28, 2007