SP-20

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation Log R-6116E

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In Reply refer to: R-89-57 and -58

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About 11:44 a.m. central daylight savings time on July 30, 1988, Iowa Interstate Railroad Ltd. (IAIS) freight trains Extra 470 West and Extra 406 East collided head on within the yard limits of Altoona, Iowa, about 10 miles east of Des Moines, Iowa. All 5 locomotive units from both trains; 11 cars of Extra 406 East; and 3 cars, including 2 tank cars containing denatured alcohol, of Extra 470 West derailed. The denatured alcohol, which was released through the pressure relief valves and the manway domes of the two derailed tank cars, was ignited by the fire resulting from the collision of the locomotives. Both crewmembers of Extra 470 West were fatally injured; the two crewmembers of Extra 406 East were only slightly injured. The estimated damage (including lading) as a result of this accident exceeded $1 million.[1]

The IAIS is a nonsignaled (dark) single track, mainline railroad operated by timetable, train orders, and special instructions. Trains are operated by two crewmembers--an engineer and conductor. IAIS normally operates two through trains daily, one in each direction between Blue Island, Illinois and Council Bluffs, Iowa, and local trains that originate at various intermediate terminals. The IAIS also operates five branch lines.

When trains are being operated over nonsignaled territory, the need for up-to-date timetables, special instructions, specific procedures for issuing and verifying train orders, as well as compliance with train orders becomes critical to the safe operation of trains. The assistant superintendent of operations, who was serving as a train order operator in Newton on the day of the accident, testified that he received and copied the train orders for Extra 470 West from the dispatcher in Iowa City, placed them on a desk in the office, and observed a crewmember pick up the train orders. Because the IAIS

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[1] For more detailed information, read Railroad Accident Report--"Head-on Collision Between Iowa Interstate Railroad Extra 470 West and Extra 406 East with Release of Hazardous Materials near Altoona, Iowa on July 30, 1988" (NTSB/RAR-89/04).

had no operating rules or procedures in place that required the train order operator to verify to the dispatcher that train orders have been received by the traincrews, on the day of the accident the dispatcher had no way of knowing if the crew of Extra 470 West had received their train orders.

The Safety Board has previously addressed the problem of train orders being issued but not verified. In its investigation of the head-on collision of CSX Transportation freight trains Extra 4443 North and Extra 4309 South at East Concord, New York, on February 6, 1987,[2] the Safety Board found that "CSX management failed to issue and enforce specific procedures for traincrews to verify the accuracy of train orders before departing...." The dispatcher involved in that accident was issuing train orders via telecopier to an unmanned location and, consequently, had no way of knowing if traincrews were receiving updated orders. The Safety Board believes that the accident at Altoona again illustrates the shortcomings of not having a procedure in place for dispatchers to verify that train orders have been received and understood by the traincrews.

Not only could the dispatcher not be assured that the traincrew of Extra 470 West received their train orders, on the day of the accident he had no way of knowing when or if Extra 470 West had departed its initial terminal. The traincrew did not report its departure from Newton, and there were no departure times recorded on the train sheets for Extra 470 West on July 30, 1988. According to testimony, the arrival and departure times of trains were reported only if an agent or "someone" at a station took the initiative to do so or if the crew remembered to call the dispatcher. By Federal regulations, dispatchers are required to maintain a record of train movements including the direction of movement and the time each train passes all reporting stations, and the arrival and departure times of trains at all reporting stations. Newton was designated by the IAIS as a reporting station. The Safety Board is concerned about the ability of a train dispatcher to move trains safely over his territory if he is unaware of the whereabouts of the trains.

Although company rules and Federal regulations require that when a train is originally made up and when a train consist is changed en route a test of the train air brake system must be conducted, the investigation revealed that the air brake tests were not being conducted on a regular basis. Testimony of the crew of Extra 406 East indicated that an air brake test was not performed at any of the locations where cars were set out or picked up en route from Council Bluffs to Altoona. The IAIS engineer who was operating the automatic brake valve during the postaccident air brake test was not familiar with the Federal requirements and was unable to perform the test properly. The Safety Board is concerned that not only were air brake tests not being conducted in accordance with company rules and Federal regulations, but that management did not provide any guidance or instructions for conducting air brake tests with an end-of-train device in cabooseless

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[2] Railroad Accident Report--"Head-On Collision of CSX Transportation Freight Trains Extra 4443 North and Extra 4309 South, East Concord, New York, February 6, 1987" (NTSB/RAR-88/03).

operations. Although the IAIS had adopted the "Rules and Instructions for Train Handling and Operation of Air Brakes," which had been in effect on the former Rock Island since 1974, management made no effort to determine that all traincrews had copies of the manual. More importantly, however, the IAIS operates cabooseless trains with an end-of-train device, and management did not update the manual which contains no instructions for conducting air brake tests with an end-of-train device in cabooseless operations.

The IAIS began operations in November 1984. In April 1987, the railroad adopted the General Code of Operating Rules as its book of rules. During the interim period, the railroad operated under the Uniform Code of Operating Rules that had been used on the former Rock Island. Testimony of IAIS officials indicated that operating employees, by virtue of their previous experience with the Rock Island, were considered qualified for the positions for which they were hired on the IAIS. Employees were given no training when the IAIS began operations in 1984 or during the interim period before the railroad adopted the General Code of Operating Rules. The company apparently believed that these employees were sufficiently competent and that training was not needed. The Safety Board believes that IAIS management was remiss in not providing recurrent training on the operating rules for the more than 2 years that the railroad operated under the Uniform Code of Operating Rules.

IAIS records indicate that after adopting the General Code of Operating Rules in April 1987, the railroad provided classroom instruction on the rules to 70 percent of its operating employees. The crew of Extra 406 East and the engineer of Extra 470 West had attended this classroom instruction. The conductor of Extra 470 West, who was hired by the IAIS several months later, did not attend the training or receive any formal rules training following his employment. Likewise, 30 percent of the operating employees on the IAIS had not received training on the General Code of Operating Rules.

The superintendent of operations and other railroad officials conducted the training classes in 1987 and indicated that an oral examination was given to employees following each class. When asked to describe how the oral examinations were administered, the superintendent of operations stated that questions were randomly chosen and posed to the class as a whole and were discussed by the group. A written examination was not administered, and no other method was used to measure an individual employee's knowledge and understanding of the operating rules. Since the training provided by the railroad failed to require each employee to demonstrate an adequate knowledge of the operating rules, management could not be assured that operating employees could satisfactorily and safely perform train movements. IAIS management was apparently willing to accept this risk, even though it was operating a "dark railroad" which relied solely on compliance with train orders and operating rules. The Safety Board concludes that the operating rules training program used on the IAIS was ineffective and failed to determine that operating employees were sufficiently knowledgeable of the operating rules.

The Safety Board's investigation found little evidence that IAIS supervisors monitored crew compliance with operating rules, even though the ratio of supervisors to employees suggests that each supervisor would not be

charged with overseeing a large group of employees. In fact, operational efficiency checking was not performed. IAIS officials cited various reasons for not performing operational tests and inspections including that the company had waivers from the FRA permitting the IAIS to not perform operational tests. The IAIS, however, could not provide documentation for an exemption or waiver. The assistant superintendent of operations stated that he did not perform efficiency testing "on orders from the superintendent of operations." Testimony from operating employees indicated that there was very little supervision of the day-to-day operations of trains and enginecrews outside the terminals and that supervisors rarely rode trains. When operating personnel believe that they will rarely encounter supervisors and that management is not concerned with strict adherence to operating rules, a diminishment of inducements for operating personnel to comply with these rules can occur. By not filling the position of road foreman of engines, a position that has responsibility for overseeing the enginecrews, management indicated to operating personnel that it was not overly concerned with the oversight of day-to-day operations.

When the crew of Extra 470 West made up the train in Newton on the morning of the accident, they failed to position properly the two alcohol tank cars. After setting out a car in Colfax, the crew again failed to reposition the two tank cars in the middle of the train leaving the two tank cars even closer to the locomotive. Since the cars immediately following the two tank cars did not derail during the collision, it is reasonable to assume that the two tank cars, had they been the fourth and fifth cars behind the locomotive upon leaving Newton, may not have derailed. Although the positioning of the tank cars was not a factor in the cause of the accident, the position of the tank cars resulted in their derailment, the subsequent release of hazardous materials, and the resulting fire. The release of the alcohol and the fire prolonged the duration of the emergency and increased risk to life and property. Further, the bodies of the crewmembers of Extra 470 West were found under the tank cars, and the autopsy reports attributed the cause of death to crushing. Since the Safety Board could not determine if the crewmembers of Extra 470 West jumped from their locomotive prior to the collision or were thrown from the locomotive during the collision sequence, the Safety Board could reach no conclusion concerning what role the positioning of the tank cars had in terms of the death of the crewmembers.

Federal regulations address the positioning of placarded tank cars in trains, and the IAIS had included these instructions in its timetable. Both the superintendent of operations and the assistant superintendent of operations at Newton stated, however, that, based on their interpretation of the regulations, the tank cars should have been the last two cars of the train. The Federal regulations as currently written, however, do not address the positioning of placarded tank cars in a caboose less train. The IAIS officials' interpretation of the regulations gives credence to the Safety Board's position that current regulations need to be revised to address the placement of tank cars carrying hazardous materials on caboose less trains.

In addition to the accident at Altoona, on July 30, 1988, four other rail equipment accidents in which damages exceeded $150,000.00 have occurred on the IAIS since it began operations. One of the accidents involved the release of hazardous materials. Although each of the four accidents met the Safety Board's accident notification criteria, the Board was not notified of any of the accidents. The chief operating officer of the IAIS stated that he was not aware of the Safety Board's accident notification criteria. Testimony of the chief dispatcher indicated there were no written procedures or list of numbers to call in the event of any emergency. Although required by Federal regulations, the carrier failed to report the two accidents that involved the release of hazardous materials to RSPA of the U.S. DOT. The IAIS did file a rail equipment report with the FRA for each of the five accidents, and, according to the chief operating officer, the company official responsible for reporting to the FRA would also be responsible for reporting any hazardous materials reports.

The foregoing suggests that the senior management of the IAIS was not familiar with all Federal reporting requirements and, consequently, provided no guidance or written procedures on the reporting of accidents on the IAIS property. Although the chief dispatcher stated that he now has prepared "a list of numbers to call," as a result of the Safety Board's investigation, the Safety Board remains concerned that IAIS management has not provided adequate guidance in this area. The Safety Board believes that IAIS should develop explicit written procedures concerning the Federal agencies to be contacted in the event of a railroad accident on the IAIS. The Safety Board is further concerned that this situation may exist on other regional railroads and that accidents, including those involving the release of hazardous materials, may not be reported in accordance with Federal regulations. While the Safety Board recognizes that it is the responsibility of railroad management to know the requirements of Federal regulations, the Safety Board believes that the American Short Line Railroad Association could address this issue by disseminating information to its membership regarding Federal agencies' accident notification criteria.

Therefore, as a result of its investigation, the Safety Board recommends that the American Short Line Railroad Association:

> Inform its membership of the circumstances of the train accident and the release of hazardous materials at Altoona, Iowa, on July 30, 1988. (Class II, Priority Action) (R-89-57)
>
> Disseminate to its membership accident/incident notification criteria of all Federal agencies. (Class II, Priority Action) (R-89-58)

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 action taken as a result of its safety recommendations. Therefore, it would appreciate a response from you

regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations R-89-57 and -58 in your reply.

Also, the Safety Board issued Safety Recommendations R-89-37 through -44 to the Iowa Interstate Railroad; R-89-45 through -51 to the Federal Railroad Administration; R-89-52 through -54 to the Research and Special Programs Administration; R-89-55 to the Archer Daniels Midland Company; R-89-56 to the Chemical Manufacturers Association and the National Industrial Transportation League; R-89-59 and -60 to the Association of American Railroads; and R-89-61 to the CSX Transportation Company, the Chicago North Western Transportation Company, and METRA. Also, the Safety Board reiterated Safety Recommendation R-87-17 to the Research and Special Programs Administration.

KOLSTAD, Acting Chairman, and BURNETT, LAUBER, NALL, and DICKINSON, Members, concurred in these recommendations.

By: James L. Kolstad
Acting Chairman