SP-20

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation Log R-Letter

Date: July 14, 1989

In Reply refer to: R-89-37 through -44

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Chairman
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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]

When trains are being operated over nonsignaled (dark) 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 IAIS 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 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.

[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).

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. Accordingly, the Safety Board believes that the IAIS should develop and enforce the use of a procedure that will require the train order operator to verify to the dispatcher that train orders issued have been received by 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. Accordingly, the Safety Board believes that the IAIS should take immediate action to require that train dispatchers maintain an accurate record of train movements, in accordance with Federal regulations.

By general order No. 2, dated January 1, 1988, the IAIS had established the Altoona yard limits from MP 346.0 to MP 347.5 and had designated the yard limit signs to be installed by a general order, dated July 8, 1988. Federal regulations require that yard limits be designated by yard limit signs and listed in timetable, train orders, or special instructions. However, the investigation revealed that yard limit signs had not been installed and that the yard limits for Altoona were not shown in the timetable or in the special instructions and were not listed on train orders. Therefore, the general order was the only means by which traincrews could have been aware of the yard limits at Altoona. Testimony from the engineer of Extra 406 East

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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).

indicated that he was aware that yard limits existed at Altoona, but he was not certain how far the yard limits extended. While the Safety Board believes that traincrews should certainly be aware and familiar with general orders, the on-board documents to which traincrews readily refer are timetables, special instructions and train orders, and these documents should reflect the most up-to-date information pertaining to train operations.

The speed of Extra 470 West at the time of the accident could not be determined. As previously noted, however, it is not unreasonable to assume that, as was the crew of Extra 406 East, the crew of Extra 470 West may not have been aware of the yard limits at Altoona. Had a "Yard Limit Approach" sign been installed 1 mile east of where the yard limits began on the east side of Altoona, the sign might have alerted the crew to be prepared to reduce speed to restricted speed. Based on the definition of restricted speed, had both trains been operated at restricted speed, the accident should have been avoided. Nevertheless, the Safety Board believes that if traincrews are expected to operate trains within yard limits in accordance with certain operating rules, it is reasonable to expect management to provide the traincrews with all the necessary information to do so. The Safety Board further believes that the management of IAIS should not have issued the general order establishing yard limits until it was prepared to install the appropriate signs.

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 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 IAIS had adopted a training program used by a predecessor railroad for the promotion of operating employees to the position of locomotive engineer. While the Safety Board's investigation indicated that in general the program was well conceived, management did not implement fully the program as outlined and did not provide the framework necessary for an effective training program.

Student engineers were afforded the opportunity to experience the hands-on aspects of locomotive operations during the three phases of the program which were to be completed in a 6-month timeframe. This opportunity was limited, however, because the trainee was responsible for performing the duties of the conductor, and at times this required the trainee to be on the ground and away from the locomotive. The investigation revealed that the engineer of Extra 406 East had few opportunities to experience over-the-road training because he was assigned to the Newton yard during most of his training period performing switching movements. Furthermore, the Safety Board believes that a student engineer cannot receive adequate instruction on the full-time duties of an engineer while at the same time performing the full-time duties of a conductor.

Further, the railroad did not determine if the training was effective or adequate because it did not monitor the progress of student engineers or evaluate their performance during training. Although required by the program, engineer instructors did not submit timely progress reports, observations, and comments in written form. The assistant superintendent of operations, the immediate supervisor of the engineer of Extra 406 East, failed to evaluate the engineer during each phase of his training and did not certify that he was qualified for the position of engineer upon completion of training, as outlined in the program. Testimony indicated that the assistant superintendent of operations, who, according to the program, was required to evaluate the performance of student engineers and certifying that they were qualified to function as a locomotive engineer, had never been qualified as a locomotive engineer. The Safety Board is concerned that an individual who has never performed the duties of an engineer may not be capable of adequately evaluating the performance of a trainee for that position.

The superintendent of operations stated that any engineer on the IAIS roster could serve as an instructor and be assigned to train a student engineer. Testimony from engineers who had served as instructors indicated, however, that they had not read the manual which outlined the training program and had not been given any guidance or instruction on the material that should be covered during the various phases of training. The Safety Board is concerned about the quality of training that trainees could receive when instructors were not provided any guidance by management and were not evaluating the performance of the trainees assigned to them. Moreover, the Safety Board believes that there is an inherent conflict in having the trainee perform the duties of conductor, who according to the operating rules is in charge of the train, and at the same time be instructed on the duties of engineer.

The engineer of Extra 406 East was on his first trip and second train movement following his promotion to engineer 1 week earlier. The engineer had been trained primarily in yard switching operations and had not previously handled a train of the tonnage and length of Extra 406 East. The Safety Board believes that training must be conducted in a way in which employees can demonstrate their ability to operate trains over the territory in which they will be operating and with the type of trains they will be expected to handle.

The Safety Board received conflicting testimony regarding whether IAIS traincrews had been qualified on the Chicago North Western (CNW) operating rules to operate over trackage of the CNW at Des Moines. The superintendent of operations of the IAIS stated that crews had been qualified on the CNW rules. However, the engineer of Extra 406 East stated that he had not been qualified on the CNW rules. The Safety Board requested but did not receive from the IAIS a list of employees qualified on the CNW and the method by which the employees were qualified. The investigation revealed that IAIS also operates over trackage of METRA and the CSX. The Safety Board believes that the IAIS should require its operating employees to be properly qualified on the operating rules for the territory of the other railroads over which they operate before they are allowed to operate as the engineer and

conductor. Furthermore, the CNW, the CSX, and METRA are responsible for determining if crews of other railroads operating over their territory are qualified on the respective company rules. The Safety Board believes that these railroads should determine if IAIS crews operating over their territory are properly qualified.

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.

According to the personnel records of the employees involved in this accident, only the chief dispatcher and conductor of Extra 406 East had a prior record of disciplinary action while employed with the IAIS. Both employees had been given letters of reprimand, and according to the superintendent of operations, the IAIS policy regarding disciplinary action was that three letters of reprimand could constitute grounds for dismissal. The conductor was issued a letter of reprimand for violation of a train order--leaving a waiting point before the designated time. This letter of reprimand apparently, however, had little effect on the conductor's adherence to operating rules, specifically compliance with train orders. If management is lax in consistently citing rules violations with appropriate disciplinary action, there is no incentive for employees to adhere to operating rules.

During the investigation of this accident, it was noted that signal No. 3472, located 0.3 mile west of the Altoona station sign, had not been removed, covered, or turned away from the track. When an out-of-service signal is left in place, the common industry practice (there is no Federal guidance on this issue) is to cover the signal head or turn the signal away from the track that it would govern. Signal No. 3472, although inoperable, displayed a dark aspect, which, according to the operating rules, should be interpreted by the crew as its most restrictive signal indication requiring the train to stop. The failure to have this signal covered or turned away from the track was not corrected by IAIS officials even though the deficiency should have been detected during operating inspections. Further, the deficiency apparently was not raised with the IAIS by the FRA, although it

too should have performed inspections that should have revealed the deficiency. Either these inspections were not performed or the IAIS and the FRA considered it an acceptable situation.

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 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 results of the toxicological testing of the crewmembers of Extra 406 East were negative. Ethanol was detected in the tissue samples of both crewmembers of Extra 470 West but was attributed to bacterial contamination. The dispatcher and train order operator working on the day of the accident were not requested to submit to toxicological testing. While there is no evidence to indicate that these individuals were or were not impaired, the Safety Board is concerned that all individuals in safety sensitive positions were not requested to submit to toxicological testing, as required by Federal regulations. The positions of dispatcher and train order operator are critical to the safe operation of trains, particularly on a "dark" railroad. Management's failure to require that these individuals submit to toxicological testing may have been the result of management not being thoroughly familiar with Federal regulations.

Therefore, as a result of its investigation, the National Transportation Safety Board recommends that the Iowa Interstate Railroad, Ltd.:

> Install yard limit roadway signs at Altoona and other areas designated in general orders and show designated limits in the timetable. (Class II, Priority Action) (R-89-37)

Remove, cover, or turn away from the track, all out of service signals. (Class II, Priority Action) (R-89-38)

Require that train order operators verify to the dispatcher that train orders have been received by operating crews. (Class II, Priority Action) (R-89-39)

Establish and enforce procedures for dispatchers to maintain an accurate and up-to-date record of train movements, as required by Federal regulations. (Class II, Priority Action) (R-89-40)

Provide written instructions and training to operating personnel for conducting air brake tests with an end-of-train device in cabooseless operations. (Class II, Priority Action) (R-89-41)

Develop and implement a comprehensive program of training and testing of the company's operating rules, in accordance with the provisions of the Federal regulations. (Class II, Priority Action) (R-89-42)

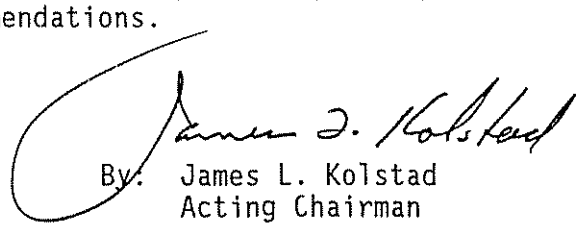
Develop and implement a program of supervision and management of train operations to include efficiency checks of traincrews, as required by Federal regulations. (Class II, Priority Action) (R-89-43)

Develop explicit written procedures concerning the Federal agencies to be contacted in the event of a railroad accident/incident on the Iowa Interstate Railroad. (Class II, Priority Action) (R-89-44)

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-89-37 through -44 in your reply.

Also, the Safety Board issued Safety Recommendations 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-89-57 and -58 to the American Short Line Railroad Association; 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