

By R-4430
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NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

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Forwarded to:

Mr. R. F. Stewart, Acting President
and Chief Executive Officer
Illinois Central Gulf Railroad
233 North Michigan Avenue
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SAFETY RECOMMENDATION(S)
R-83-83 through -89

About 5:12 a.m., c.d.t., on September 28, 1982, Illinois Central Gulf Railroad (ICG) freight train Extra 9629 East (GS-2-28) derailed 43 cars on the single main track of the Hammond District in Livingston, Louisiana. Of the derailed cars, 36 were tank cars; 27 of these cars contained various regulated hazardous or toxic chemical commodities, 2 contained nonregulated hazardous materials, and 5 contained flammable petroleum products. A total of 20 tank cars were punctured or breached in the derailment. Fires broke out in the wreckage, and smoke and toxic gases were released into the atmosphere. Thermally-induced explosions of two tank cars that had not been punctured caused them to rocket violently. About 3,000 persons living within a 5-mile radius of the derailment site were evacuated for as long as 2 weeks. Nineteen residences and other buildings in Livingston were destroyed or severely damaged. More than 200,000 gallons of toxic chemical product were spilled and absorbed into the ground, requiring extensive excavation of contaminated soil and its transportation to a distant dump site. This has resulted in long-term closure of the railroad line and an adjacent highway. Property damage has been estimated to be in excess of \$14 million. 1/

Extra 9629 East was the September 28, 1982, Illinois Central Gulf through freight train GS-2. Operated every night, GS-2 was made up for the most part of the products of the Baton Rouge-New Orleans petrochemical complex and invariably included a variety of hazardous and volatile commodities hauled in tank cars -- chlorine, flammable compressed gases, flammable liquids and solids, poisons, combustibles, and corrosives. Routinely included in the train were as many as 75 to 100 or more loaded tank cars destined for locations scattered across the Midwest and Northeast. Everyone on the railroad who had a role in the train's makeup, inspection, handling, and supervision, as well as a broad spectrum of people not actually engaged directly in train movements, including top ICG management responsible for making policy and communicating it to division-level management, those who directed ICG's safety and training programs, and the division engineers and trackmen responsible for keeping the Hammond District and the rest of the ICG safe for the operation of heavy hazard materials trains, should have clearly

1/ For more detailed information, read Railroad Accident Report—"Derailment of Illinois Central Gulf Railroad Freight Train Extra 9629 East (GS-2-28) and Release of Hazardous Materials at Livingston, Louisiana, September 28, 1982" (NTSB-~~RAR-83-700~~).

RAR-83-5

understood the potential risks involved should the train derail. The movement of hazardous materials in rail transportation requires great dedication to safe train operation and a high degree of professionalism throughout the organization. The Safety Board found little evidence of these high standards in the ICG organization.

As a matter of standard practice, the cars in GS-2 were classified, or assembled, in destination blocks. As a result, the two forward blocks, which had been added at Baton Rouge, each contained a pair of empty cars. From a train dynamics standpoint, these cars were in extremely vulnerable locations should an emergency application of the brakes occur with the slack stretched. It would have been simple, even desirable from an operations standpoint, to have corrected the situation at Baton Rouge. The lead block, destined for McComb, could have been consolidated with the McComb block on the rear of the train. Similarly, placing the two empty gondola cars, that were in the second Baton Rouge block, behind the Chicago block out of Geismar would have expedited their movement by eliminating the need to switch these cars farther up the line. More importantly, these changes would have resulted in no empty car being nearer than the 44th car from the head end, consequently reducing substantially the risk of a car being jackknifed by excessive buff forces.

The general yardmaster, who was responsible for switching operations and the assembly of Extra 9629 East at Baton Rouge, was not required to determine whether a train's profile was safe nor was he required to perform the switching to make it so. He could have contacted the night trainmaster for guidance in a questionable case, but he had not received the training in train dynamics or hazardous materials that ICG had provided to some of its employees. Hence, the general yardmaster was not likely to perceive the danger inherent in a train such as Extra 9629 East.

The lack of a holding bracket had allowed the trailing locomotive unit's front end air hose to strike obstructions between the rails whenever this unit had been used to lead a locomotive consist and the hose was not in use. The air hose coupling was battered and worn to the extent that it would become uncoupled when subjected to severe vertical lift or force. The critical degree of wear might have been reached when the unit brought a train into Baton Rouge on September 27. The unit was inspected while laying over during the day at the diesel shop, but the lack of a bracket and the worn coupling apparently went unnoticed. The air hose became uncoupled shortly after it was charged, and the locomotive began moving to couple the two parts of Extra 9629 East together at North Baton Rouge Yard. No trouble with the hose was encountered on the welded track between Baton Rouge and Livingston, but the hoses again parted after the derailment when the locomotive and head-end cars were leaving Livingston for McComb. The testimony of the operator-clerk that the train had gone into emergency braking "2 to 3 seconds" after the lead unit "bottomed out" severely at the derailment site suggests strongly that the air hoses had also parted at that time.

The "bottoming out" probably occurred at the joint with the broken bars at or close to the culvert at milepost 26.8. The location was a chronic soft spot, with visibly pumping mud at the joint, which had required regular attention over the years. The bars were worn and bleeding rust from center cracks indicated fatigue and service abuse. For some reason which ICG could not explain during the investigation, ICG had relaid 1.4 miles of the main track at Livingston with jointed rail while relaying most of the rest of the Hammond District with welded rail. Pumping joints and center-cracked and broken joint bars were a chronic problem in the jointed section. As recently as 5 months before the derailment, a Louisiana Department of Transportation track inspector had found three

center-cracked joint bars in the section. The ICG track inspector and section foreman should have been on the lookout for this type of failure, particularly at pumping joints. Although they made four inspections of the jointed track during the week preceding the accident, they failed to detect and replace the cracked bars at the culvert. This is an indication that ICG inspectors have been conditioned to accept defects or that they do not make thorough enough inspections to discover them.

As part of its training program, ICG offers courses in elements of train dynamics and hazardous materials to its employees. The engineer had taken courses in both fields. Although they worked on the part of the ICG system with the highest concentration of hazardous materials traffic, neither the general yardmaster nor the conductor had received such training, probably because it was not mandatory. Had he known more about train dynamics, the general yardmaster might have put together an Extra 9629 East that was less vulnerable to internal compressive forces. The conductor might have been more concerned about the way his train was being operated had he been given a better understanding of some of the commodities in his train.

The last major accident on the ICG preceding the Livingston derailment was an Amtrak passenger train derailment at Springfield, Illinois, on October 30, 1980. ^{2/} In its report of that accident, the Safety Board cited the many major train accidents which had occurred on the ICG since 1969. It noted that there were recurrent findings of inadequacies in ICG's training and safety programs, which led to the conclusion that safety was not being given sufficient emphasis in all aspects of the railroad's operations. The Safety Board found that the same fundamental weakness in ICG's approach to safety was still evident and was a contributing factor in the Springfield accident. Although ICG responded that it had intensified its efforts to achieve greater rules compliance, the Livingston accident is another indication that ICG has yet to significantly modify its programs to achieve safer train operations systemwide. The testimony of ICG's vice president of operations left little doubt that management still equates safety largely with the reduction of employee personal injuries. While preventing reportable injuries is important work, and while not a single employee injury resulted from the Livingston derailment, it should be noted that no rail accident has occurred in recent years which had greater economic impact or potential for tragedy.

The ICG division involved in this accident had a safety supervisor with a broad background in train operations, yet he had very few responsibilities relevant to train operations safety, or operating rules training and enforcement. The trainmaster who had direct responsibility for the safety of Extra 9629 East, its crew, and operations at Baton Rouge and over the Hammond District was preoccupied on the night of the accident with an injured employee. Although he testified that he tried to be on hand at least once a night when a crew reported for duty, the operator-clerk stated that it was rare to see a supervisor on the graveyard shift at Baton Rouge. She said that she worked 75 percent of her duty tours on that shift at Baton Rouge and that she worked where the crews reported, just a few feet from the trainmaster's office. The trainmaster recalled that he had last ridden a train over the Hammond District about 6 months before the accident.

The three most recent major accidents on the ICG system all occurred at night and involved employee failures. According to the transportation superintendent, operations are conducted 24 hours a day with about as many trains being operated at night as are

^{2/} See Railroad Accident Report, "Derailment of Amtrak Passenger Train No. 21 on the Illinois Central Gulf Railroad, Springfield, Illinois, October 30, 1980" (NTSB-RAR-81-5).

operated during the day. The transportation superintendent had a large force of operating supervisors, but only a few had assigned hours at night. This inequity between nighttime and daylight supervision is by no means peculiar to ICG. Many railroads are unable to effectively supervise nighttime operations because few supervisors work at night. In its 1980 report of a collision involving a train being operated by a conductor who was under the influence of marijuana, ^{3/} the Safety Board said:

As with numerous recent train accidents investigated by the Safety Board, the crewmembers. . . reported for duty at night, and there was no supervisor working at the reporting point at night. Similarly, it does not appear that. . . supervisors ride with crews or board trains enroute with any regularity. Crewmembers are not going to be concerned about their own fitness, much less the fitness of the men they work with when there is little probability that they will encounter a supervisor where they report for work, or on the job. As long as mainline operations are conducted 24 hours a day, supervision of train crews should be provided on a 24-hour basis. No supervisory program of testing for rules compliance can be effective if it is conducted on a part-time basis.

Although the engineer had a history of violating rules and restrictions, division-level management repeatedly restored the engineer to duty and allowed him to stay on a job in which his performance could impact seriously on other persons. The decision to restore an employee to a position of trust and responsibility after he has been discharged for serious rules infractions should be entrusted only to management above the division level. This seems particularly vital in the case of employees who are given the responsibility for operating trains and who are normally subject to only minimal supervision. The Safety Board believes that it is an unacceptable risk to other employees and the public to permit an employee with serious deficiencies, such as the engineer of Extra 9629 East, to operate trains carrying hazardous materials or passengers.

The responsibility for monitoring the engineer's performance was left to the line supervisors, not all of whom might have been familiar with his past performance. Insofar as violations of Rule G are concerned, it is probable that such supervisors will not be on the lookout for them and may even look the other way as long as submission to a toxicological examination remains voluntary. Line supervisors, who are primarily concerned with the expeditious movement of trains, are not likely to enforce this important rule in marginal cases where it is virtually impossible for them to obtain the hard evidence they need. This accident again demonstrated that there is very little likelihood that crewmembers can or will exercise their responsibility to prevent an impaired fellow crewman from going to work. The conductor was nominally in charge of the crew, yet he never was in actual contact with the engineer at any time prior to the accident.

Therefore, the National Transportation Safety Board recommends to the Illinois Central Gulf Railroad:

Provide intensive supervision of night train operations and include in its prescribed supervisory efficiency checks, periodic unannounced checks of train crewmembers' fitness for duty at reporting points and on trains en route. (Class II, Priority Action) (R-83-83)

^{3/} See Railroad Accident Report, "Rear-end Collision of Consolidated Rail Corporation Freight Trains ALPG-2 and APJ-2 near Royersford, Pennsylvania, October 1, 1979." (NTSB-RAR-80-2).

Improve locomotive inspection procedures at the Baton Rouge diesel facility. (Class II, Priority Action) (R-83-84)

Provide all employees who are involved in the makeup, handling, and operation of hazardous materials trains thorough training in emergency response to hazardous materials incidents and train dynamics. (Class II, Priority Action) (R-83-85)

Include in its hazardous materials and operating rules training curricula thorough reviews and explanations of the timetable special instructions pertaining to the handling of hazardous materials incidents and providing local emergency forces with accurate response information. (Class II, Priority Action) (R-83-86)

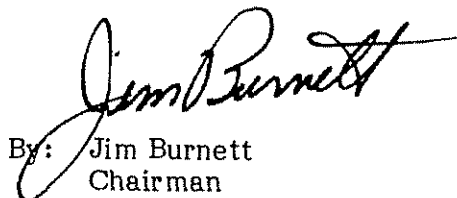
Provide the conductors and engineers of all trains which include hazardous materials cars with current and complete emergency response information for each hazardous material carried in their train. (Class I, Urgent Action) (R-83-87)

Before reopening the Hammond District to the through operation of trains containing hazardous materials, improve roadbed conditions to provide adequate vertical support at track joints and replace all track joint bars which give evidence of fatigue cracking. (Class II, Priority Action) (R-83-88)

Require that the rehiring of train service employees who are discharged for serious infractions of the operating rules and restoring them to train service be approved by management above the division level. (Class II, Priority Action) (R-83-89)

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" (P.L. 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations. Therefore, we would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS, BURSLEY, and ENGEN, Members, concurred in these recommendations.


By: Jim Burnett
Chairman