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**NATIONAL TRANSPORTATION SAFETY BOARD**  
**WASHINGTON, D.C.**

ISSUED: November 13, 1985

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Forwarded to:

Mr. Clyde S. Forbes, Jr.  
Vice-President and General Manager  
The Chicago, South Shore and South Bend  
Railroad  
North Carroll Avenue  
Michigan City, Indiana 46360

SAFETY RECOMMENDATION(S)

R-85-106 through -112

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About 6:51 p.m., c.s.t., on January 21, 1985, eastbound Chicago, South Shore and South Bend Railroad (South Shore) train No. 123 and westbound South Shore train No. 218 collided head-on on the eastward main track about 1,490 feet west of the west end of the Gary Station platform at Gary, Indiana. The eastward main track was being used for single-track operation for about 3.5 miles between the end of the double track east of Gary Station and Clark Crossover west of Gary Station because damage caused by cold weather breaks to the catenary propulsion power system over the westward main track made the track unusable by electrically propelled trains. The lead cars of the self-propelled units of each train were crushed and derailed. Seventy-nine passengers, 6 crewmembers, and 2 off-duty employees were injured in the collision. The South Shore estimated the damage to be about \$2,433,000. 1/

General Notice No. 62 specified that the eastward main track would be used for single-track operations and that single-track operating rules would be in effect to govern train movements until the catenary over the westward main track was repaired. Basically, the operation of trains under the authority of General Notice No. 62 was no different than when train orders were used before the issuance of the notice. As a matter of operational expediency, the Superintendent of Transportation issues a General Notice in the format of General Notice No. 62 when one of the two main tracks in double-track territory is to be used for single-track operations for an extended time. Since single-track operating rules are used regularly between Gary and South Bend, Indiana, and operating employees are qualified on them, by issuing a General Notice to establish single-track operation for a given length of track, the superintendent can avoid delay to trains and reduce the workload of the train dispatcher.

1/ For more detailed information read Railroad Accident Report--"Head-on Collision of Chicago, South Shore and South Bend Railroad Train Nos. 123 and 218, Gary, Indiana, January 21, 1985" (NTSB/RAR-85/13).

The most serious problem arising from the establishment of single-track operation between Clark Crossover and the east end of the double track related to the concurrent scheduled departure of eastbound and westbound trains at Gary Station. Under double-track operating rules and procedures, this arrangement did not present a problem because each train occupied its own directional main track. Also, equipment for an originating scheduled train could enter onto a main track at Gary Station without difficulty because trains would be moving in only one direction on each track. The South Shore superintendent who prepared General Notice No. 62 said that when the notice was issued, he did not overlook the concurrent scheduled departure times and possible conflicts for opposing trains at Gary. He said that the intent of General Notice No. 62 was to define the limits of the single-track operation, and to establish single-track operating rules to govern train movements. Further, he said that he expected the traincrews and the dispatcher to resolve any operating conflicts that might arise during the movement of trains, such as the concurrent departure times of two trains at Gary Station, by use of the appropriate operating rule(s). Operating rule S-71 establishing the superiority of trains was one of the rules he expected to be used in resolving a possible conflict such as was present for train Nos. 123 and 218. The dispatcher apparently discerned no problem with continuing the established practice of allowing equipment to enter a track early to load passengers at Gary Station since General Notice No. 62 had not specifically prohibited the equipment of a westbound train from occupying the eastward main track before its scheduled departure time.

According to the South Shore operating rules, where one time is shown in a timetable for a train at a station, it is the departure time unless it is otherwise indicated. Thus, the times shown in the timetable for train Nos. 123 and 218 at Gary Station are departure times. However, the rules further state that where there is neither a siding nor fixed signals, the time indicated for a train applies where traffic (passengers) is received or discharged. Since there was no siding or a fixed signal at Gary Station, the application of this rule resulted essentially in an impasse, because it allowed both trains to be at the station platform at the same time. In consideration of the "flat time" meet permissible by the South Shore operating rules, this situation should have been addressed in General Notice No. 62.

The Safety Board believes that South Shore rule S-83 was applicable in this situation. Rule S-83 states, "A train must not . . . pass from one of two or more tracks to single track, until it has been ascertained whether all trains due, which are superior, have arrived or left." The conductor of train No. 218, in calling the dispatcher before moving the equipment for his train onto the eastward main track, did attempt to locate train No. 123, but the dispatcher did not provide him this information. While South Shore rule 93 allows inferior trains to use the main track within yard limits if superior trains are not delayed, rule 93 precluded train No. 218's equipment from entering the eastward main track at Gary Station until 6:50 p.m., because until that time train No. 123 was the superior train. The dispatcher erred in authorizing train No. 218's equipment to occupy the eastward main track without knowing the location of train No. 123. Since train No. 123 was not scheduled to depart Gary Station until 6:50 p.m., and so long as it arrived there at or before 6:50 p.m., nothing would have been gained by train No. 123 clearing the eastward main track west of Gary Station before the passengers were discharged. The passengers could have been unloaded and train No. 123 could have left Gary Station at 6:50 p.m. (flat time) and continued toward Michigan City, Indiana.

This analysis is predicated on on-time train performance, which should have been the basis for the instructions contained in General Notice No. 62, and emphasizes the importance of considering every possible aspect of train operations in formulating temporary deviations from standard procedures. Even though it had superior rights until

6:50 p.m. according to the rules, train No. 123 was 3 to 4 minutes late on its schedule, and it should not have attempted to reach Gary Station in the face of train No. 218's scheduled departure time at 6:50 p.m. The Safety Board concludes that General Notice No. 62 was not sufficiently explicit in dealing with the operating conflicts that could and did arise.

South Shore operating rule 83a provides for a delay of 3 minutes for a train leaving South Bend if the schedule of two trains would cause them to meet at South Bend. If a rule such as rule 83a, which is applicable only to the single-track operation at South Bend, had been put into effect at Gary by General Notice No. 62, or if a similar provision to eliminate the consequences of crewmembers misjudging the time by several minutes had existed, train No. 123 might have reached Gary Station safely. Rule 3, requiring the adjustment of the watches of crewmembers, would permit up to a 1-minute error in time if the times indicated by the watches were 30 seconds slow in one instance and 30 seconds fast in another. Thus, a rule similar to rule 83a, providing for a 3-minute delay in the scheduled departure time from a station if the schedule of two trains would cause them to meet at that point, would have provided a margin of safety and at most caused train No. 218 to depart Gary at 6:53 p.m., 3 minutes late. This extra time would have allowed train No. 123 to have arrived at Gary Station safely. Also, if eastbound trains, and train No. 123 in particular, had been issued a "call order" <sup>2/</sup> for the conductor or engineer of train No. 123 to call the dispatcher before the train passed Clark Crossover, the accident could have been prevented.

Since the South Shore dispatcher's communication circuits were not tape-monitored, there is no record of the communications that occurred at any time during the evening of January 21. The Safety Board has investigated several accidents <sup>3/</sup> in which communications between the dispatcher and engineer or interlocking operators were recorded by a tape recorder. These records, which also provide the time of the communications, have been invaluable in improving operating practices and in accident reconstruction. The South Shore should consider installing a tape monitor in the dispatcher's office to record and preserve communications between the dispatcher and mobile units or telephones.

The dispatcher's actions in some regards and lack of action in other regards indicated that he believed the crew of train No. 123 knew their train was the inferior train and that they were governed by rule S-71 that required an inferior train to clear the main track for a superior train. He did not allow any margin for error. The dispatcher was indifferent to the location of train No. 123 according to the conductor of train No. 218 when the conductor asked the dispatcher about his responsibility as conductor of train No. 218 if the two trains met. The dispatcher said that he believed train No. 123 was delayed at Kensington Interlocking and State Line Interlocking and would be running about 7 to 11 minutes late. Also, he said that he anticipated an additional delay for train No. 123 at the drop pan area between MP 59.4 and MP 60. However, this delay would have occurred after train No. 123 passed Clark Crossover. The dispatcher did not make any allowance for the possibility that train No. 123 might make up some of the lost time between State Line Interlocking and Clark Crossover.

<sup>2/</sup> A form 19 train order issued by the dispatcher for a train crewmember to call the dispatcher before passing a specified location.

<sup>3/</sup> Railroad Accident Reports--"Rear-end Collision Between Control Trains OIPI-6 and ENPI-6X, near Saltsburg, Pennsylvania, February 26, 1984" (NTSB/RAR-85/02); "Head-on Collision of National Railroad Passenger Corporation (Amtrak) Passenger Train Nos. 151 and 168, Astoria, Queens, New York, July 23, 1984" (NTSB/RAR-85/09).

It is apparent that when the conductor of train No. 218 was talking to the dispatcher, the dispatcher did not know the location of train No. 123, which seemingly should have dictated his trying to contact the engineer of train No. 123 to determine the train's location. Except under unusual circumstances a dispatcher is expected to and should know the location of a first-class passenger train to a closer tolerance than 7 to 11 minutes. A dispatcher should be able to predict a train's arrival at a given location fairly accurately because he knows the existing conditions, the performance characteristics of an engineer, and the range of running times of a train between various points. The dispatcher in this case should have had a good knowledge of running times based on his experience both as an engineer and as a train dispatcher.

If the time that engineers report their trains onto the South Shore tracks at Kensington Interlocking cannot be used reliably to calculate running times of trains, South Shore operating officers should establish a specific reporting point. The dispatcher incorrectly assumed that train No. 123 would be 7 to 11 minutes late when he allowed the equipment for train No. 218 to occupy the eastward main track at the Gary Station platform before 6:50 p.m. Since it was accepted practice to permit the equipment for a train to occupy the westward main track before a train's scheduled departure time under a normal double-track operation, the dispatcher apparently saw no problem in permitting No. 218's equipment to occupy the eastward main track in a similar manner. However, in a proper application of the rules he should not have given the conductor of train No. 218 permission to bring the equipment onto the eastward main track without a message or train order. The train and engine crews operating into and out of Gary Station knew that it was the practice to bring the equipment onto the westward main track before a train's scheduled departure time; therefore, the crewmembers of train No. 218 apparently did not believe it was unusual or unsafe for their equipment to occupy the eastward main track ahead of the scheduled departure time. This belief was strengthened by the conversation the conductor of train No. 218 had with the dispatcher concerning train No. 123. If train No. 123 had entered Gary Station at 6:50 p.m. or earlier, it would not have been able to clear the main track without some shifting moves because train No. 218's equipment would have been blocking the main track. In part, the dispatcher's job in this situation was to deal with the ambiguity created by General Notice No. 62 by making a positive command decision. Instead, he allowed the ambiguity to remain and did not act to resolve the conflict between train Nos. 123 and 218 as operations management had anticipated.

The train dispatcher is located at Michigan City. The dispatcher does not have control facilities to operate track signals or switches, but does control train order signals at Gary and at Shops in Michigan City by which he can signal an engineer to stop a train and have a crewmember call him for instructions. The dispatcher is provided with a dedicated dispatcher's telephone and company and AT&T dial-telephone circuits. He can communicate with the train engineers by radio. The South Shore does not have a tape monitor on the dispatcher's communications circuits.

The South Shore does not have manned reporting stations along the line to report the time a train passes a given location. In some instances during the day, a ticket agent may report a train's passing at his station, but at night there are no ticket agents on duty. However, the dispatcher can obtain the time a train passes a given location by calling the train's engineer. When a train arrives at Gary, Michigan City, Randolph Street Station (in Chicago, Illinois), or South Bend, the train's conductor reports to the dispatcher the train's arrival time. In addition, the dispatcher can obtain the time a train enters or leaves the "OS" <sup>4/</sup> track sections (referred to as the "OS time") at the power substations from the propulsion power monitoring equipment. (The controls and an information printout unit for the equipment are in the dispatcher's office.) When a train is scheduled to leave its

<sup>4/</sup> The recorded time a train passes a designated location.

initial station, the conductor is required to contact the dispatcher, which usually is done by telephone, to determine if the dispatcher has any train orders or special instructions for the train. The dispatcher gives the conductor train orders orally and/or gives a clearance card specifying either the train orders for that train or that there are no train orders.

The Safety Board has found a dispatcher's lack of knowledge of train locations to be a factor in previous accidents. On May 28, 1982, following its investigation of a head-on collision between two trains in Beverly, Massachusetts, 5/ the Safety Board issued Safety Recommendation R-82-27 to the Boston and Maine Corporation:

Enforce Boston and Maine Corporation operating rule 222 that requires operators to promptly report and the dispatcher to promptly record train passing times at locations where passing reports are required.

In that accident, the dispatcher did not record promptly the OS times of trains as they passed reporting points. In the absence of proper and prompt recording of OS times, it was difficult for him to keep in mind the approximate locations of his trains. Consequently, he allowed two opposing trains onto the same track and they collided. The Safety Board believes that if the South Shore dispatcher had recorded the passing times of train No. 123 past the OS points, he would have been able to respond to the request of conductor of train No. 218 for the location of train No. 123.

The dispatcher also failed to respond fully to the requirements of his position before the Gary accident when he did not determine the cause, if any, for the stop-and-proceed signal aspect displayed by signal 591 when the engineer of train No. 213 inquired about it earlier in the day. While the engineer of train No. 213 should not have gone past the signal without stopping, the dispatcher must share with the engineer the responsibility for the rules violation, whether he authorized the engineer of train No. 213 to operate past the stop-and-proceed signal aspect without stopping or not, because he did not report to his supervisor that train No. 213 did not stop at the signal, as operating rule 291 required. (Since the dispatcher was not called upon to provide a diesel locomotive to tow train No. 213 into Gary, he had to have been aware of the fact that train No. 213 did not stop at signal 591.) The difficulty the engineer of train No. 123 had earlier in obtaining positive guidance from the dispatcher, when he was operating train No. 213 and encountered the stop-and-proceed signal aspect, led to his not calling the dispatcher again when he operated train No. 123 through the signal just before the collision. While the dispatcher may have discouraged engineers and conductors from calling him because of his discourteous manner, the engineer of train No. 123 said this was not a factor in his decision not to inquire about the signal. The engineer most likely did not call the dispatcher about the stop-and-proceed signal when he observed it while operating train No. 123 because he did not expect any new or additional information from the dispatcher concerning the signal. On the other hand, the dispatcher denied the conversation related to the stop-and-proceed aspect displayed by signal 591; moreover, the trouble report failed to confirm the engineer's report of the signal abnormality.

The South Shore should have had a provision for the dispatcher to move a train past a stop signal in a drop pan area when the alternative was to stop the train and have it towed to a point where the catenary was usable or to the next station. Nevertheless, the

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5/ Railroad Accident Report--"Head-on Collision of Boston and Maine Corporation Extra 1731 East and Massachusetts Bay Transportation Authority Train No. 570 on Former Boston and Maine Corporation Tracks, Beverly, Massachusetts, August 11, 1981" (NTSB-RAR-82-01).

Safety Board believes that the dispatcher did not comprehend his authority when he stated that he could not allow a train to pass a stop-and-proceed signal aspect without stopping. Normally, the full authority for the operation of trains vested in the Superintendent of Transportation to move trains as expeditiously and safely as possible is delegated to the dispatchers. If an unusual situation develops, the dispatcher can issue train orders or messages and validate them by signing the superintendent's initials or name. These instruments then become valid operating instructions even if contradictory to an operating rule. Such a means could have been used to move train No. 213 past signal 591 while it was displaying a stop-and-proceed aspect. If, on the other hand, the dispatcher was correct when he assumed that on the authority given to him by the Superintendent of Transportation he could not countermand an operating rule by using a train order or a message, the South Shore operating officers should publish revised dispatching procedures so that the dispatchers and operating crewmembers will understand the action to be taken when a train encounters a signal displaying a stop-and-proceed aspect in a drop pan area.

The engineer of train No. 123 exercised poor judgment in assuming that the stop-and-proceed signal aspect displayed by signal 591 for train No. 123 was for the same reason as the stop-and-proceed aspect he encountered while operating train No. 213. Moreover, had he inquired of the dispatcher about the stop-and-proceed signal aspect for train No. 123, train No. 218's engineer might have overheard the radio message and been alerted to the oncoming train's location. An inquiry might have alerted the dispatcher to the fact that train No. 123 was east of Clark Crossover, in which case he might have taken note of the situation and acted to have prevented the accident. The fact that the engineer of train No. 123 was a qualified train dispatcher might have influenced him in his decision and misled him into believing that he knew how the dispatcher would cope with the restricting signal. Therefore, he felt no need to call the dispatcher about the stop-and-proceed signal aspect displayed by signal 591 for train No. 123. The decision not to call was not based on a hesitancy to call.

On-the-job training (OJT) can be an excellent means of teaching a trainee the requirements of a job and helping the trainee develop the skills needed to perform the tasks of the job. But the success of the system depends on the capability of the instructors conducting the trainee's OJT and the uniformity of evaluation. The Safety Board notes that South Shore operational officers select the instructors for a trainee's OJT based on the instructor's skill and record, but that the instructors are not monitored and trained to ensure that their methods are correct and consistent. Since the instruction of a trainee is the delegated responsibility of different senior employees and the tests administered to a trainee may be given by different supervisors, the Safety Board believes that the South Shore operations management should develop and put into effect a comprehensive standard training curriculum and examination, covering specific job tasks and skills, to ensure that all employees are knowledgeable of the critical elements of the position before a trainee or senior employee is advanced to a more responsible position.

As a result of its investigation of this accident, the National Transportation Safety Board recommended that the Chicago, South Shore and South Bend Railroad:

Provide for a 3-minute delay similar to that in rule 83a for all operations involving single-track operating rules at locations where the arrival and departure times of opposing trains are in conflict. (Class II, Priority Action) (R-85-106)

Require that "call orders" be issued to traincrews to call the dispatcher before a train enters the single-track section when single-track operating procedures and rules are established temporarily in double-track territory. (Class II, Priority Action) (R-85-107)

Install a tape-monitoring system to record and preserve a record of communications to and from the dispatcher on the dispatcher's telephone and radio circuits. (Class II, Priority Action) (R-85-108)

Establish a reliable reporting system to provide the dispatcher more accurate passing times of trains entering upon the Chicago, South Shore and South Bend tracks at Kensington Interlocking for use in estimating the movement of trains. (Class II, Priority Action) (R-85-109)

Modify the power-monitoring system so that the time trains pass the substations can be identified more readily, and require the dispatcher to record those times promptly on his train sheet. (Class II, Priority Action) (R-85-110)

Provide written instructions to operating personnel concerning the action required when a train encounters a stop-and-proceed signal aspect in a section of track where no propulsion power is available. (Class II, Priority Action) (R-85-111)

Develop a comprehensive curriculum covering the critical elements and job skills, including communication skills and manner for each position, and require that an employee pass a uniform examination before being advanced to a new position. (Class II, Priority Action) (R-85-112)

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 actions taken as a result of its safety recommendations and 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-85-106 through -112 in your reply.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in these recommendations.

By:   
Chairman