

Log R-613



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 9, 1989

In reply refer to: R-89-1 through -4

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President
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About 12:36 p.m. eastern standard time on January 29, 1988, northbound National Railroad Passenger Corporation (Amtrak) train 66, The Night Owl, struck maintenance-of-way equipment on track 2 in Chester, Pennsylvania. The engineer of train 66 received serious injuries, and 8 crewmembers and 15 passengers received minor injuries. The estimated damage as a result of this accident was \$3,397,215.¹

On January 28, 1988, track 2 north of Hook interlocking was taken out of service so that it could be occupied by on-track maintenance equipment and work crews. The Safety Board determined that the procedures used by all parties to take the track out of service were in accordance with Amtrak rules and instructions. The second-shift Hook tower operator, who was acting on the request of a track foreman, placed signal 14L to display a stop aspect and placed a blocking device on the signal lever; he also placed blocking devices on switches 15 and 23, which were aligned normal to preclude trains from crossing to track 2 from tracks 1 and 3. He then requested permission from the second-shift train dispatcher to place track 2 out of service. The train dispatcher then issued the proper train order to the Hook tower operator, the Penn train director, and the maintenance-of-way track foreman. The tower operator was not required to reverse switches 7 or 13 to route trains away from the out-of-service portion of track 2. Thus, switches 7 and 13 remained aligned so that the only protection against northbound trains approaching the out-of-service track on track 2 was the stop aspect of signal 14L.

¹For more detailed information, read Railroad Accident Report--"Collision of Amtrak Train 66, The Night Owl, with On-Track Maintenance-of-Way Equipment, Chester, Pennsylvania, January 29, 1988" (NTSB/RAR-89/01).

The second-shift Hook tower operator verbally informed the train dispatcher that the appropriate blocking devices were applied (normally referred to as a BDA--a blocking device applied). The train dispatcher thereafter made the appropriate entries on the train sheets and the train order book to indicate the completion of the train order and the signal and switch BDAs. Train order 920 was properly issued to the track foreman. The ballast regulator was later moved onto track 2 on the instructions of the track foreman possessing the train order. No track barricades were installed.

Between the time track 2 was taken out of service and the accident, shift changes were effected at both the Hook tower operator position and the train dispatcher position. Testimony by both the second- and third-shift Hook tower operators indicated that they had discussed the out-of-service track 2 during the change of shifts although they did not comply with an Amtrak rule requiring the oncoming operator to read aloud the out-of-service train order to the operator being relieved. The Safety Board believes that this failure to adhere to the required turnover procedure was not uncommon, but rather was routine. However, because evidence indicates that the third-shift operator was aware of the out-of-service status of track 2 and the position of signals and switches within the interlocking when he assumed the operator's duties, the Safety Board concludes that the failure of the tower operators and dispatcher to adhere to the required turnover procedures did not contribute to the accident.

While all of the involved parties adhered to Amtrak rules and procedures during the initial process of taking track 2 out of service, the evidence indicates that neither the second- nor third-shift train dispatchers or Hook tower operators adhered strictly to the rules thereafter. In addition to the omission of the train order read-back confirmation during the Hook tower shift relief, the oncoming tower operator (third shift) did not notify the second-shift train dispatcher regarding his understanding of the train order in effect, and the second-shift train dispatcher did not ask the tower operator for such a readout, nor did the oncoming third-shift dispatcher discuss the effective train order with the Hook tower operator or the Penn train director as he was required to do after his position relief. Furthermore, none of the personnel adhered precisely to the requirements for the signal and switch blocking device removals that were made to accommodate train movements through the Hook interlocking. Some of these train movements required the removal of blocking devices to reposition signals and switches. Each time the devices were removed, permission should have been recorded on the Hook tower operator's block sheet and the train dispatcher's train sheet. Several instances were noted where the practice was not followed.

Amtrak considered the third-shift operator to have been qualified under its rules to perform the tower operator's duties. The operator had passed his annual physical examination, had received all of the required training, and had experience in the tower at the Hook interlocking. Thus, although Amtrak personnel records did not indicate that the operator was qualified at Hook tower this appears to be primarily a recordkeeping problem. Further, he had been employed in that capacity for 7 years and his record showed no prior misrouting errors. His disciplinary problems appeared to be related only to his nonavailability for work at times when he was supposed to be on call for duty assignments. However, the Safety Board also recognizes that an employee's excessive absenteeism often can be an indication of problems which could affect job performance.

Although Amtrak had considered him to be qualified and he had no record of improperly performing his job task, the Safety Board is concerned that the third-shift tower operator was not well suited to the critical demands of the safe operations of a railroad. Other tower operators stated after the accident that they were not surprised that this particular operator was confused by the events of January 29, 1988. The operator did not take any action to control any distractions that may have been posed by other employees in Hook tower. He previously had indicated that the job was stressful, particularly the irregular schedule that he often encountered as an extra operator which required he work on the first-in, first-out schedule. The operator had, in fact, attempted to find other employment but remained on the job because of pay.

The Safety Board believes that the operator's performance, his uneasiness about the duties of the job, and his excessive absenteeism were indicators of possible unsuitability for the job that should have been addressed by Amtrak supervisors, especially through its performance appraisal system. Accordingly, Amtrak should review its requirements and standards for the suitability and qualifications for tower operators before and after individuals are employed for that position.

The success of Amtrak rules for routing trains around maintenance-of-way equipment depends on the coordinated efforts of the dispatcher who controls and monitors train movements, tower operators who have actual control of signal and switch positions, and maintenance-of-way employees who are involved in the track work. The procedures in effect on January 29, 1988, were essentially the same as those that were in effect when another Amtrak passenger train collided with a Plasser track

machine at Edison, New Jersey on April 20, 1979.² As a result of its investigation of that accident, the Safety Board concluded that "there were adequate rules and instructions to provide for the safe movement of a track machine if they were complied with." However, the Safety Board also concluded that "Amtrak's management provided little supervision to insure compliance of the rules." The January 29 accident has prompted the Safety Board to reexamine the adequacy of these rules and procedures, compliance with the rules and procedures, and specifically, the redundancy provided to eliminate the possibility that a single human error can result in a potentially catastrophic accident.

Amtrak rules provide safety redundancy by requiring that at least two persons are aware of the signal status and track alignment. If the rules are followed, the train dispatcher should be able to detect a tower operator's oversight in the event he or she does not properly position the signal and switch levers and apply blocking devices. However, proper verbal coordination between the tower operator and the train dispatcher is essential as there is no direct indication of signal or switch status to the dispatcher.

The Safety Board notes, however, that the train dispatcher is also responsible for maintaining safe operations and that the coordination required to ensure redundancy was not effected as train 66 approached Hook. While the third-shift train dispatcher was aware of the need to cross train 66 from track 2 to track 1 at the Hook interlocking to prevent its intrusion onto the out-of-service track, he did not initiate action to determine if the operator properly aligned the switches. Although the rules did not require that he do so, prudence dictates that he should have. The Safety Board believes (although it cannot conclude with certainty) that rigid adherence to Amtrak rules regarding the coordination and verification of blocking devices removed (BDRs) and BDAs may have prompted the Hook tower operator to recheck the alignment of switch 7 as he requested the BDR from signal 14L and, further, that such a request may have prompted the train dispatcher to request a recheck of switch 7 as he entered the BDR in his log. Certainly the safety redundancy intended by the rules was eliminated when the procedures were omitted. Consequently, the Safety Board determined that general noncompliance with the rules by Amtrak employees was a contributing factor in the accident.

²Railroad Accident Report--"National Railroad Passenger Corporation, Head-End Collision of Train No. 111 and Plasser Track Machine Equipment, Edison, New Jersey, April 20, 1978" (NTSB-RAR-79-10).

The centralized electrification and traffic control (CETC) system has eliminated the need for tower operators and the need for constant communication and coordination by the dispatcher with another person to accomplish the task of handling trains and equipment. The Safety Board sees the elimination of the tower operators as an advantage for the dispatcher in that dispatchers will be able to arrange all signals and switches for establishing routes without the need to coordinate with an operator at a remote location. The need to operate the switch and signal to cross over train 66 on the day of the accident would still exist with the CETC system. However, when a track is taken out-of-service, the section of track turns blue on the visual display of the CETC system to serve as a reminder, much like the blocking device does for the tower operator. If the CETC system had been installed to control the signals and switches of Hook interlocking on the day of the accident, the likelihood of this accident occurring would have been somewhat diminished; however, the same error could have occurred if the dispatcher failed to recognize that unshunting equipment was on the track and removed the blocking from the track. Therefore, the Safety Board believes that Amtrak must evaluate the systems and procedures used on the Northeast Corridor to provide positive protection for trains and equipment and for undesired intrusions into out-of-service track sections. Although the CETC system would offer safety benefits greater than the tower operator procedures in effect at Hook interlocking on January 29, 1988, the CETC system does not provide the positive separation of trains that can be provided by an advanced train control system.

Under Amtrak procedures, the engineers and conductors of trains operating through affected interlockings are not informed about out-of-service track by train orders or any other direct means. Amtrak officials at the public hearing on this accident testified that not notifying train crews of out-of-service track was acceptable since out-of-service track protection is not contingent upon actions by the train crews other than the normal compliance with signals, a rigid requirement under all circumstances. However, in response to a safety recommendation which was issued as a result of the Safety Board's investigation of a derailment at Fall River, Wisconsin,³ the president of Amtrak stated,

The Fall River accident, however, demonstrated that what is more essential than switch position in such operations is prior written notification to all trains approaching such locations, including a clearance provision for a train to

³Railroad Accident Report--"Derailment of Amtrak Passenger Train 8 Operating on the Soo Line Railroad, Fall River, Wisconsin, October 9, 1986" (NTBS/RAR-87/06).

pass the location. As the Board's report noted, the speed at which no. 8 was operating as it approached Fall River resulted not only from signal aspects but, also, and more importantly, from failure to provide written notification that a switchtender was on duty or that the train would be diverted. In such circumstances, if track beyond Fall River were occupied by track equipment or an opposing train and the crossover was in normal position, absence of notification could result is just as serious a potential for an accident.

The president of Amtrak further stated that in a situation such as that at Fall River, Amtrak's procedure would be to require trains to obtain a bulletin order and a train order before passing the block station and that if this procedure had been used by the Soo Line, the derailment of train 8 would have been avoided. There is no substantial difference in the need for prior notification of the engineer in this accident and in the need for notification in the accident at Fall River. The engineer of train 66 stated that had he been issued a train order stating that track 2 beyond Hook was out of service, his authority would have been restricted to use track 2 only to Hook and he would have questioned the clear signal he received on track 2. This information would have prevented the accident. The Safety Board believes that it is the responsibility of Amtrak management to ensure the uniform use of procedures, such as that outlined by the president of Amtrak, throughout the railroad systems on which Amtrak operates trains.

Therefore, the National Transportation Safety Board recommended that the National Railroad Passenger Corporation:

Expand and intensify supervision and management of tower operators and dispatchers, including, at a minimum, regular performance evaluation observations to improve the enforcement of compliance with the operating rules. (Class II, Priority Action) (R-89-1)

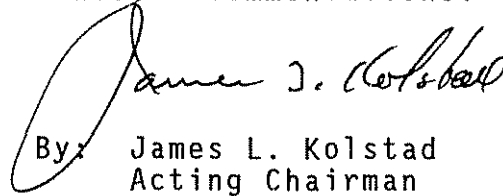
Establish standards for the selection, training, duties, and responsibilities of tower operators. (Class II, Priority Action) (R-89-2)

Develop and implement a procedure to prevent locomotives or trains from entering out-of-service track sections, unless permission has been received from the person in charge of the out-of-service track. (Class II, Priority Action) (R-89-3)

Develop and implement a procedure for the prior notification of engineers and conductors when a track is out-of-service. (Class II, Priority Action) (R-89-4)

Also, the Safety Board issued Safety Recommendation R-89-5 to the American Railway Engineering Association.

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

James L. Kolstad

By: James L. Kolstad
Acting Chairman