



National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Log R-1050
WBC

Date: August 16, 1988
In reply refer to: R-88-50

To: Distribution List
(attached)

On October 12, 1987, National Railroad Passenger Corporation (Amtrak) passenger train 6, the California Zephyr, derailed in Russell, Iowa, injuring 15 crewmembers and 107 of the 230 passengers. The train was operating eastbound on the westward track, since the maintenance-of-way department had taken the eastward main track out of service. The train was traveling about 60 mph when it entered into a stub track and struck maintenance-of-way work equipment. Two locomotive units and 11 of the 14 passenger cars derailed, as well as the maintenance-of-way crane and three flat cars. ^{1/}

As they approached Russell, the crewmembers of train 6 were operating the train in accordance with the BN operating rules and instructions. BN Timetable No. 6, which provides speed restrictions for the First Subdivision main track of the Galesburg Division, authorizes a maximum allowable speed of 79 mph for passenger trains, except for those moving against the current of traffic, for which the maximum allowable speed is 59 mph.

To protect the maintenance-of-way employees and equipment that would be working on the at-grade crossing replacement and switch relocation at Russell on October 12, 1987, the roadmaster in charge of the Russell area requested a Form B track bulletin on October 9, 1988, according to Rule 455 of the BN maintenance-of-way rules. That rule provided three options for train and engine speed through the limits of the work area the Form B was to protect. Since the preparatory work for the grade crossing rehabilitation project would not, and ultimately did not, disturb the track structure or geometry, the roadmaster chose not to restrict train speeds.

The Form B allows passenger trains to be authorized through a work area at 59 mph on nonsignalled track and at 79 mph on signalled track. Freight trains, which may require a longer distance to stop, even though the maximum speeds are lower, are restricted to 49 mph and 60 mph (for the same conditions, except when special instructions require lower speed limits). Freight trains can also be authorized through a work area at maximum speed.

On the day of the accident, Form B track bulletin No. 1116 gave the track foreman the authority for the track and mandated the procedures the traincrew and the track foreman were to follow to move a train through the work area. The pilot of train 6 contacted the track foreman listed on the Form B for the first work area east of Chariton, Iowa, in accordance with the rule. When the track foreman authorized

^{1/} For further information, read Railroad Accident Report--Collision and Derailment of Amtrak Train 6 on the Burlington Northern Railroad, Russell, Iowa, October 12, 1987 (NTSB/RAR-88/04).

train 6 to proceed through the work area at normal speed without stopping at the red board, the traincrew had no reason to expect that a switch would not be properly lined for the main track.

A track laborer acknowledged that he failed to return the west stub track switch to its normal position when a crane was moved into the stub track to clear the westward main track for train 6. As a result, train 6 was diverted into the stub track where it collided and derailed with the crane. The track foreman authorized train 6 into the work area without personally ensuring that the track was safe for the movement he authorized.

Train 6 approached the west stub track switch at a speed of about 60 mph, a speed that did not permit the locomotive crew sufficient time to identify, react, and stop the train before it reached the improperly lined switch. Amtrak calculated the stopping distance at an emergency braking level that compared with the calculations based on accepted engineering standards using data from the event recorder. The emergency braking level for train 6, computed to be 1,237 feet, is greater than the sight distance to either the switch banner (859 feet) or the switch points (639 feet).

At the speed train 6 was authorized to operate through the work area, unforeseen circumstances, such as in this case an improperly lined switch or men and/or equipment that have not cleared the track, can arise too quickly for a traincrew to have time to take proper action.

The Safety Board believes that the provisions of the Form B authorizing trains through a work area, whether the track is signalled or nonsignalled, at the maximum authorized speed is an unsafe operating practice. This practice effectively reduced the ability of the locomotive crew to see the equipment and switch banner ahead in time to stop the train before it reached the improperly lined switch, thereby eliminating the last chance to avoid the accident. The Safety Board concludes that the rusted red switch banner failed to provide visual contrast to its background, preventing the crew from identifying the position of the switch at a distance that would have permitted them to stop or significantly slow the train.

The BN maintenance-of-way rules also provide for the display of a red flag at prescribed locations to define the limits of a work area. Trains must stop short of the red flag and not proceed unless authorized by the track foreman. The Safety Board considers the display of a red flag at a prescribed location to be a fixed signal that indicates conditions that would affect the movement of a train. Both the engineer and BN pilot of train 6 interpreted the red flag the same way; however, the BN division manager of safety rules disagreed with this interpretation. The Form B provides for authorizing trains to proceed past a red flag without stopping when so authorized by the track foreman, and at a speed determined by the track foreman. The track foreman makes this determination based on his experience for track conditions and the type of work being performed. He can authorize a speed ranging from a speed less than restricted speed to the maximum authorized speed for that track. Under certain circumstances, a train dispatcher may authorize a train to proceed through a red signal after stopping; however, in these instances, the dispatcher can only authorize the train to proceed through the signal at restricted speed. The Safety Board concludes that had train 6 been authorized to operate through the Form B work area at restricted speed, the engineer would have had time to stop his train when he saw that the switch was improperly lined for the main track.

The Form B in effect at the time of the accident referenced the name of the track foreman as the person a train crewmember would have to contact to obtain permission to proceed through the limits of the Form B order. According to BN rules, no other person was authorized to grant such permission. The Safety Board is concerned that the track foreman, who was not experienced in train operations, authorized a train to pass a red flag without stopping and to proceed at speeds greater than restricted speed. The Safety Board is especially concerned because this commonly used practice was established by BN management, and the track foreman was simply complying with this accepted practice. The Safety Board believes such a practice degrades the safety of train operations and the safety of maintenance-of-way employees.

The authorization for the passage of trains through a work area must provide for the protection of not only the men and equipment in the work area, but for the safe operation of trains. The Safety Board recognizes that other railroads require that a train approaching a work area reduce its speed and be prepared to stop at the limits of the work area, with the speed of a train through the area being prescribed by train order, not the track foreman. One railroad using the Form B track bulletin stated that the use of normal track speed is the exception and that restricted speed is generally used when men and equipment are in the work area. The Safety Board believes that the Form B needs to be changed to limit the speed of a train through a work area to restricted speed.

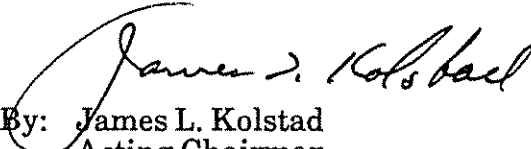
Therefore, the National Transportation Safety Board recommends that the Union Pacific System; Missouri-Kansas-Texas Railroad System; St. Louis Southwestern Railway Company; Southern Pacific Transportation Company; Atchison, Topeka, and Santa Fe Railway Company; Chicago and North Western Transportation Company; Davenport, Rock Island and North Western Railway Company; Lake Superior and Ishpeming Railroad Company; Minnesota Transfer Railway Company; and Soo Line Railroad Company:

Eliminate the practice of using Form B track bulletins that authorize a speed greater than restricted speed through work areas.(Class II, Priority Action) (R-88-50)

Also as a result of its investigation, the Safety Board issued Safety Recommendations R-88-40 through -45 to the Burlington Northern Railroad Company, R-88-46 through -48 to the National Railroad Passenger Corporation (Amtrak), and R-88-49 to the American Short Line Railroad Association and to the Association of American Railroads.

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 recommendation in this letter. Please refer to Safety Recommendation R-88-50 in your reply.

BURNETT, Chairman, KOLSTAD, Vice Chairman, and LAUBER, NALL, and DICKINSON, Members, concurred in this recommendation.


By: James L. Kolstad
Acting Chairman

Distribution List for Safety Recommendation R-88-50:

Mr. Michael H. Walsh
Chairman
Union Pacific System
1416 Dodge Street
Omaha, Nebraska 68179

Mr. R. N. Whitman
Chairman and Chief Executive Officer
Missouri-Kansas-Texas Railroad System
701 Commerce Street
Dallas, Texas 75202

Mr. Denman McNear
Chairman and President
St. Louis Southwestern Railway Company
Southern Pacific Building
One Market Plaza
San Francisco, California 94105

Mr. Denman McNear
Chairman, President and Chief Executive Officer
Southern Pacific Transportation Company
Southern Pacific Building
One Market Plaza
San Francisco, California 94105

Mr. John S. Reed
Chairman
Atchison, Topeka, and Santa Fe Railway Company
80 East Jackson Boulevard
Chicago, Illinois 60604

Mr. James R. Wolfe
President and Chief Executive Officer
Chicago and North Western Transportation Company
One North Western Center
Chicago, Illinois 60606

Mr. Robert J. Seeley
President
Davenport, Rock Island and North Western Railway Company
P.O. Box 530
Soo Line Building
Minneapolis, Minnesota 55440

Mr. G. D. Bantle
President and General Manager
Lake Superior and Ishpeming Railroad Company
105 East Washington Street
Marquette, Michigan 49855

Mr. J. W. Gohmann
President
Minnesota Transfer Railway Company
53 West Jackson Boulevard
Suite 1710
Chicago, Illinois 60604

Mr. Dennis M. Cavanaugh
President
Soo Line Railroad Company
P.O. Box 530
Soo Line Building
Minneapolis, Minnesota 55440