



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 6, 2003

In reply refer to: R-03-22

Mr. Matthew K. Rose
Chairman, President and Chief Executive Officer
Burlington Northern Santa Fe Corporation
2650 Lou Menk Drive, 2nd Floor
Post Office Box 961057
Fort Worth, Texas 76161-0057

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses BNSF train crew attentiveness and signal awareness form procedures. The recommendation is derived from the Safety Board's investigation of the April 23, 2002, collision of a BNSF freight train with a commuter train at Placentia, California, and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued three safety recommendations, one of which is addressed to the BNSF Railway Company. Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

On Tuesday, April 23, 2002, about 8:10 a.m. Pacific daylight time, eastbound BNSF freight train PLACCLO3-22 collided head on with standing westbound Southern California Regional Rail Authority (Metrolink) passenger train 809 on the No. 2 track at Control Point (CP) Atwood in Placentia, California.¹ Emergency response agencies reported that 162 persons were transported to local hospitals. There were two fatalities.² Damage was estimated at \$4.6 million.

¹ For more information, see National Transportation Safety Board, *Collision of Burlington Northern Santa Fe Freight Train With Metrolink Commuter Train at Placentia, California, April 23, 2002*, Railroad Accident Report NTSB/RAR-03/04 (Washington, DC: NTSB, 2003).

² In order to provide standard classifications, the Safety Board applies published aviation injury criteria (49 Code of Federal Regulations 830.2) to all modes of transportation. For statistical uniformity only, an injury to a person that results in death within 30 days of the accident is classified a fatality. In the Placentia accident, a third injured passenger, a 77-year-old woman, died on or about June 7, 2002, which was about 45 days after the accident. Under the foregoing criteria, she is not classified in this report as an accident fatality. The Safety Board's investigation did not identify any evidence that her death was directly attributable to injuries sustained in the

The National Transportation Safety Board determined that the probable cause of the accident was the freight train crew's inattentiveness to the signal system and their failure to observe, recognize, and act on the *approach* signal at milepost (MP) 42.31. Contributing to the accident was the absence of a positive train control system that would have automatically stopped the freight train short of the *stop* signal and thus prevented the collision.

The *General Code of Operating Rules* required both crewmembers to remain alert for the signal, to call out the signal, and to continue observing the signal until the train passed. Investigators found that the *approach* signal at MP 42.31 was visible from more than 3,000 feet away, or for 48 seconds, given the speed of train PLACCLO3-22 (hereafter referred to by its operational identification, BNSF 5340).

As evidenced from their statements to investigators, the BNSF 5340 crewmembers were focusing attention on their conversation rather than on the signals governing the operation of their train. The crewmembers said they were engaged in a conversation about previous employment. The conductor said that he called aloud the signal at MP 42.31—the signal before the signal at CP Atwood—as *clear*. The conductor said that he was looking down and “doing stuff” when he looked up, “glance(ed) at the clear, and [the engineer] says ‘clear.’” The engineer told Safety Board investigators that as the train headed toward this signal, he was looking in the direction of and talking to the conductor and did not look at the signal. He said, “I didn’t see it.” Both crewmembers said they approached CP Atwood thinking they were operating on a *clear* signal and that they thus were not required to stop or even slow the train. (According to data from signal system data loggers, the signal at MP 42.31 was displaying *approach* at the time BNSF 5340 passed.)

BNSF procedures required the conductor to enter the name/aspect of each signal encountered during the trip on a signal awareness form.³ This form was recovered from BNSF locomotive 5340 after the accident. The first page of the form included the signals from MP 144.00 to MP 157.91. The train entered the territory at an intermediate point on the form, and the first signal encountered was at MP 146.98. The entry for this signal was “DA,” meaning *diverging approach*. This entry showed the speed and time (10 mph and 7:20 a.m.) as required by BNSF procedures. Some entries on the first page showed “A,” indicating that the signals displayed *approach*. Several entries were “AM,” or *approach medium*. Most remaining entries had a “C,” which the conductor explained meant *clear*. The second page contained the list of signals involved with the accident, from MP 159.48 to MP 40.71, the location of the *stop* signal.

The conductor explained that he always entered a “C” in this column as shown on the first page of the signal awareness form. Furthermore, the conductor explained that he did not always make entries each time he observed a *clear* signal; he said he often waited either until an *approach* signal was encountered or until it was time to turn to the next page of the awareness form, then he backfilled the entries for the *clear* signals up to that point.

accident. Further, this classification does not reflect any determination that she did not, in fact, succumb to injuries received in the accident.

³ The investigation determined that the Union Pacific Railroad also requires conductors to annotate signals on a special form, and the Norfolk Southern Railroad is considering such a requirement.

According to BNSF procedures provided to the Safety Board, a *clear* signal requires only that a check mark be made in a column on the form, and the procedures do not clearly specify that the entry must be made at the time the *clear* signal is observed. For efficiency, trains are generally operated such that the majority of signals encountered by an operating crew will be *clear*. Thus, conductors may inadvertently become passive in their observance of signals. In that case, the additional effort required by conductors to complete the signal awareness form when the signal displays either *stop* or *approach* (that is, the additional requirement to record the speed and time the signal was passed as well as the aspect name) may prompt the crew to be more actively involved in observing the signals.

In the view of the Safety Board, if conductors were also required to record speed and time information for *clear* signals, they would, of necessity, take a more active role in observing *all* signals. In this accident, for example, the conductor stated that he made an effort to observe the misidentified *approach* signal only when the train was close to the signal. That action was limited to making a single observation and calling out “clear” for the engineer to confirm. If the conductor had been required to complete the signal awareness form for a *clear* signal in a similar manner to other signals, he may have felt compelled to observe all signals earlier (even those expected to be *clear*) in order to have more time to accurately observe and record the signal-related information. This earlier observation of signals would also provide conductors with additional time to make repeated signal observations if necessary. At the same time, the added requirement would not in any way interfere with the conductor’s other duties.

The Safety Board concluded that had the BNSF 5340 conductor been more actively involved by entering *clear* signals onto his signal awareness form at the time he observed them, his awareness of signal indications may have been increased, and he may not have misidentified an *approach* signal as *clear*.

The conductor’s practice of not entering *clear* signals onto his signal awareness form at the time he observed them was not specifically prohibited by BNSF rules, as those rules required different actions for *clear* signals than for more restrictive signals.

The National Transportation Safety Board therefore makes the following safety recommendation to the BNSF:

Revise your signal awareness form procedure to require recording of time, speed, and aspect name for all signals encountered at the time they are encountered.
(R-03-22)

The Safety Board also issued safety recommendations to the Federal Railroad Administration and to the Association of American Railroads. In your response to the recommendation in this letter, please refer to Safety Recommendation R-03-22. If you need additional information, you may call (202) 314-6177.

Chairman ENGLEMAN, Vice Chairman ROSENKER, and Members GOGLIA, CARMODY, and HEALING concurred in this recommendation.

Original Signed

By: Ellen G. Engleman
Chairman