

R-353

# NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

ISSUED: April 22, 1981

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Forwarded to:

Mr. J. C. Kenefick  
President  
Union Pacific Railroad Co.  
1416 Dodge Street  
Omaha, Nebraska 68179

SAFETY RECOMMENDATION(S)

R-81-41 through -47

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About 3:06 p.m., on October 16, 1980, Union Pacific Railroad Company (UP) freight train Extra 3749 West (NPH-16) struck the rear of UP grain train Extra 3557 West (SGTLB-635) while it was standing about 100 feet west of intermediate signal No. 5517 near Hermosa, Wyoming. Two train crewmembers were killed and two crewmembers were injured. The 3 locomotive units of NPH-16 and 16 cars, including the caboose, of SGTLB-635 were derailed. Total damage was estimated to be \$993,000. 1/

Departing Dale Junction, Wyoming, NPH-16 was routed on track No. 2 to East Hermosa, Wyoming, and about 2 p.m. was stopped just east of East Hermosa because the home signal displayed a stop aspect. At 2:19 p.m., the dispatcher activated the routing for NPH-16 on track No. 3, and the home signal changed immediately to a clear aspect, indicating that the train could proceed. At 2:45 p.m., the dispatcher attempted to radio NPH-16 crewmembers because his train graph indicated that NPH-16 had not yet moved; the crewmembers said later that they did not hear the radio message. At 2:58 p.m., the train graph indicated that NPH-16 had begun to move, so the dispatcher did not attempt to contact the engineer to determine why the train had not moved earlier. The engineer later told investigators that the head brakeman was not feeling well and that he had gone to the second locomotive unit to use the lavatory. He said that he waited until the head brakeman returned before moving the train. The engineer said that he did not attempt to notify the dispatcher of the head brakeman's illness and that he was never contacted by the conductor about the delay at East Hermosa.

According to UP operating rule 269, both the engineer and conductor of NPH-16 should have contacted each other and then radioed the dispatcher to determine why the East Hermosa signal was remaining at a stop indication for such a long time. When the engineer saw the aspect change to green, he should have notified the conductor and the dispatcher of his decision not to move NPH-16 because the head brakeman was ill and not in the lead locomotive unit. If the crewmembers had communicated with each other and the dispatcher to determine why the signal at East Hermosa was remaining at stop for such a long time, they would probably have been told that SGTLB-635 was stopped ahead on track No. 3. SGTLB-635 had been standing for over an hour because six other trains had been stopped, some over 12 hours, east of Laramie because of a severe snowstorm. The crewmembers then would have operated their train more cautiously after leaving East Hermosa and might have tried to contact SGTLB-635 to determine its stopped location.

1/ For more detailed information read "Railroad Accident Report--Rear-End Collision of Union Pacific Railroad Company Freight Trains Near Hermosa, Wyoming, October 16, 1980" (NTSB-RAR-81-3).

NPH-16 was authorized to operate at a maximum speed of 50 mph. The engineer said that after leaving East Hermosa he received clear signal aspects at West Hermosa and at the following two intermediate signals, Nos. 5503 and 5517, on track No. 3. The engineer said that he did not notice the caboose of SGTLB-635 just beyond signal No. 5517 until he was 1,200 feet away. Since the event recorder established that he had begun applying the dynamic brake about 1 mile east of signal No. 5503 when the train was traveling over 35 mph on a 1.8-percent descending grade, and he had begun to gradually apply the airbrakes when 0.35 mile past signal No. 5503, his application of the brakes in emergency 1,200 feet before the signal did not stop the train before it struck the caboose of SGTLB-635.

Since postaccident tests did not disclose any malfunctions with the signal system or train equipment, it is apparent that an inadequate method of braking NPH-16 on the 1.8-percent descending grade was a causal factor in the accident. However, the UP's dispatching of trains out of Cheyenne into the snowstorm and toward stopped trains and the dispatcher's failure to alert crewmembers on following trains, such as NPH-16, of the conditions ahead are questionable practices. In addition, the investigation of UP train handling and airbrake rules and instructions in relation to the event recorder tape on NPH-16 revealed that there was a lack of adequate rules and instructions on how to handle the dynamic brake and airbrakes on a train when descending a steep grade. The engineer of NPH-16 had not been instructed or examined on UP rules for about 2 1/2 years. It was also difficult for the engineer to understand the special instructions in the UP timetable concerning the operation of a train on steep, descending grades.

The event recorder was very helpful in determining the actual speed of NPH-16, the use of the dynamic brake, the airbrake applications, the throttle positions, and the time elapsed as the train approached the point of collision, and the Safety Board commends the UP for its installation. However, it did not record the engineer's acknowledgment of the restrictive signals when they were passed. If movement of the acknowledging lever had been recorded, it would have been possible to confirm which signals had restrictive aspects. In its investigation of the derailment of Amtrak train No. 4 at Lawrence, Kansas, on October 2, 1979, <sup>2/</sup> the Safety Board also found that it would have been possible to determine if the engineer had acknowledged the automatic train stop (ATS) inductor if the event recorder had been adapted to record that event. Since such information would be useful in determining if signal systems or ATS equipment is functioning properly, the Safety Board concludes that acknowledgment of such safety systems should be recorded.

Although the event recorder was not damaged in this collision, it was located in a forward area of locomotive unit No. 3749 that was easily damaged in the collision. Also, the locomotive batteries were destroyed in the accident, causing a loss of power to the recording device, radio, and cab lights. Even if the engineer had been able to summon help on the radio, he could not have done so because of the loss of power from the batteries. As a result of its investigation of the Lawrence, Kansas, accident, the Safety Board recommended to the Federal Railroad Administration that emergency lights and power be provided on passenger train equipment. The Safety Board believes that emergency power and lights should also be provided on locomotives.

<sup>2/</sup> "Railroad Accident Report--Derailment of Amtrak Train No. 4, on the Atchison, Topeka and Santa Fe Railway Company, Lawrence, Kansas, October 2, 1979" (NTSB-RAR-80-4).

Therefore, the National Transportation Safety Board recommends that the Union Pacific Railroad Company:

Establish rules and procedures which require enginecrews to communicate fixed signal aspects to conductors while trains are en route on signalized track. (Class II, Priority Action) (R-81-41)

Amend and clarify rules to require dispatchers and train crewmembers to communicate with each other about conditions affecting the movement of their train. (Class II, Priority Action) (R-81-42)

Expand the rules and instructions governing the use of the dynamic brake to include conditions of when to apply the dynamic brake on a descending grade, at what speeds the brake is most effective, and what action to take when the dynamic brake has failed prior to or while being applied. (Class II, Priority Action) (R-81-43)

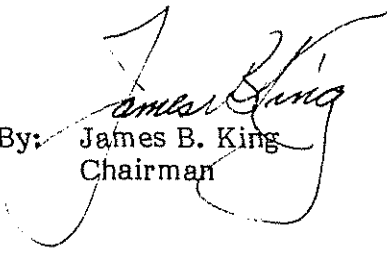
Improve training, evaluation, and examination of train crewmembers so that they become and remain proficient in the train handling and special instruction aspects of their territories. (Class II, Priority Action) (R-81-44)

Modify event recorders to record activation of the cab signal acknowledging lever. (Class II, Priority Action) (R-81-45)

Relocate event recorders so as to lessen the likelihood of their becoming damaged in an accident. (Class II, Priority Action) (R-81-46)

Provide the cabs of locomotives with emergency power so that emergency lights, radios, and event recorders continue to operate when normal power is lost. (Class II, Priority Action) (R-81-47)

KING, Chairman, and McADAMS and GOLDMAN, Members, concurred in these recommendations. DRIVER, Vice Chairman, and BURSLEY, Member, did not participate.

By:   
James B. King  
Chairman