

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

ISSUED: February 26, 1981

Forwarded to:

Mr. D. Girard-di Carlo
Board Chairman
Southeastern Pennsylvania
Transportation Authority
PSFS Building
12 South 12th Street
Philadelphia, Pennsylvania 19107

SAFETY RECOMMENDATION(S)

R-81-36

About 7:56 a.m., on July 17, 1980, Southeastern Pennsylvania Transportation Authority (SEPTA)-Consolidated Rail Corporation (Conrail) commuter train No. 472 struck the rear of SEPTA-Conrail commuter train No. 406 while it was standing on the No. 2 track east of the station at North Wales, Pennsylvania. The rear car of train No. 406 overrode and destroyed the empty lead car of train No. 472. Of the estimated 321 persons on the 2 trains, 64 passengers and 3 crewmembers received injuries. Damage to the equipment was estimated at \$1,475,000.^{1/}

The lead car and two rear cars of train No. 472 had experienced electrical problems earlier, and in an attempt to solve the problem, the cars had been electrically isolated from the other two cars in the five-car train. As a result of the isolation, the engineer was operating the train from the second car and the conductor had assigned the brakeman to ride in the operating compartment of the lead car with the responsibility to sound the whistle for road crossings and pass hand signals to the engineer to convey the track conditions and signal aspects.

After the train passed wayside signal No. 330, 4,720 feet west of the North Wales station, the brakeman saw the whistle board which required the engineer of an approaching train to sound the whistle for the Beaver Street crossing in North Wales. About the same time, he saw the lighted headlight of a train ahead. He later stated that at the time he could not distinguish on which track the train was or if it was moving toward or away from him, and that he did not see red marker lights displayed on the rear. He said he saw a green light ahead but he did not remember seeing a distinguishable signal aspect. Shortly after he saw the headlight, he turned to the rear and attempted to pass a signal through the car to the conductor to warn the engineer to reduce speed, but the signal apparently was not received.

^{1/} For more detailed information read "Railroad Accident Report--Rear-End Collision of Southeastern Pennsylvania Transportation Authority-Consolidated Rail Corporation Trains Nos. 406 and 472 on Conrail Track, North Wales, Pennsylvania, July 17, 1980" (NTSB-RAR-80-11).

SEPTA-Conrail commuter trains are equipped with white headlights at both the front and the rear. The rears of the trains are also equipped with small red marker lights, but the lights are not visible from a distance during daylight and do not meet current Federal Railroad Administration (FRA) standards for marking services. The FRA has permitted (as authorized by 49 CFR 221.15(c)3 for locomotives) Conrail to use the rear-facing white headlight illuminated on low beam to mark the rear of selfpropelled commuter trains rather than the red or amber lights required by 49 CFR 221.15(a).

The lighted rear-facing headlight of train No. 406 presented a visual problem for the brakeman. Even after the brakeman could distinguish on which track the train was, it was still difficult to perceive motion. This same problem was observed by personnel on a test train used during the investigation. When the rear-facing headlight of a standing car ahead of the test train was first sighted, it was impossible to determine on which track the car was and if the car was standing or in motion. The Safety Board believes that the brakeman's lack of familiarity with the characteristics of the roadway and his uncertainty over the situation presented by the illuminated headlight may have contributed to his failure to see signal No. 328 and to recognize its aspect. His failure to do so reduced the time available to him to relay a signal to the engineer and thus allow the engineer to stop the train. The Safety Board concludes that the use of a white light on the rear of certain trains, rather than a red or amber light which is required to be displayed on the rear of most trains, creates confusion and unsafe conditions.

The Safety Board has recommended that the FRA amend 49 CFR 221.15(c)3 to prohibit the use of the white rear headlight as a marking device on any trains. However, pending FRA action on that recommendation, the Safety Board believes that SEPTA should promptly equip its commuter cabs with approved devices and discontinue the use of the rear-facing headlight as soon as the cars are so equipped.

Therefore, the National Transportation Safety Board recommends that the Southeastern Pennsylvania Transportation Authority:

Install approved rear marking devices on its commercial cars and discontinue the use of rear-facing headlights for that purpose.
(Class II, Priority Action) (R-81-36)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in this recommendation.

By:  James B. King
Chairman