



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Lozoff R-670

Date: **APR - 4 1997**

In Reply Refer to: R-97-1 and -2

Honorable Jolene M. Molitoris
Administrator
Federal Railroad Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

On February 9, 1996, about 8:40 a.m., near Secaucus, New Jersey, an eastbound New Jersey Transit (NJT) commuter train proceeded past a stop indication at an interlocking signal and collided nearly head-on with a westbound NJT commuter train. About 400 passengers were on the two trains. The engineers on both trains and one passenger were killed and 168 people suffered injuries in the collision.¹

As a result of its investigation, the National Transportation Safety Board determined that this accident was caused by the failure of the errant engineer to perceive correctly a red signal aspect because of his diabetic eye disease and resulting color vision deficiency, which he had failed to report to NJT during annual medical examinations. Contributing to the accident was use of an eye examination not intended to measure color discrimination by the NJT's fee-for-service physician who certified the engineer for duty.

The Safety Board found that during a 1995 company physical conducted by a fee-for-service practitioner, the engineer who caused the accident had not been able to identify the numbers on several color-coded plates of the Dvorine Pseudo-Isochromatic Plates (PIP) examination, which vision specialists recognize as being a comparatively reliable test for identifying color vision deficiencies. The physician then administered the Dvorine nomenclature test, which is used to determine if a patient knows the correct names of colors. After the engineer correctly named the colors on the color wheel, the physician certified him for duty. The nomenclature test instructions specifically state that the test is not to be used when determining an individual's color discrimination ability. The doctor later stated that he believed the nomenclature test to be a supplemental examination to the Dvorine PIP test.

¹ For additional information, see Railroad Accident Report—*Near Head-On Collision and Derailment of Two New Jersey Transit Commuter Trains near Secaucus, New Jersey, February 9, 1996* (NTSB/RAR-97/01).

Despite the doctor's error, the argument can be made that the testing and certification of this engineer was in compliance with Federal certification standards, which only require that an individual have "the ability to recognize and distinguish between the colors of signals." Further, the *Code of Federal Regulations (CFR)* allows a medical examiner to certify an engineer with restrictions if the doctor concludes that despite the individual not meeting the color vision threshold(s), he or she has the ability to safely operate a locomotive.

The Safety Board believes that the color vision requirement for railroad engineers is extremely important because color is the primary information cue in safety-critical visual signals. Moreover, the colors used in signal aspects are very likely to be confused by individuals with red-green color vision deficiency. Current Federal regulations do not specify how to test for the ability to discriminate colors; rather, they permit a railroad to select the test or method it will use to determine if its engineers comply with the regulation. As a result, tests may differ from railroad to railroad, or even from one medical examination to another. While railroad physicians may be aware of the color vision requirement for locomotive engineers, they may not recognize which color vision test is a valid measurement tool.

In an issues paper presented to the Railroad Safety Advisory Committee (RSAC) regarding engineer certification standards, the Federal Railroad Administration (FRA) stated that it believes the current hearing and vision acuity standards comply with the Americans With Disabilities Act and that they adequately ensure that locomotive engineers possess the requisite physical abilities to do their jobs. However, the FRA also stated that it recognizes that the testing and the interpretation of test findings is not uniform and therefore asked the RSAC to address the issue. The FRA cites as an example a case in which an engineer who upon failing a vision test given by one railroad physician applied to work at another railroad whose physician certified him. The Safety Board believes that this example, the Secaucus collision, and other accidents demonstrate that the current standards should be revised to specify the test, testing procedures, and scoring criteria that railroad physicians should use in administering color vision tests. Perhaps an alternative evaluation method, such as a color vision test that accurately simulates color-coded railroad signals, should be developed as an additional screening for railroad employees in safety-sensitive positions. Such a test would have the advantage of having high validity to applicants being tested, to those administering the tests, and to judges who may decide arbitration.

The Secaucus accident highlights another problem that a physician has in determining the fitness for duty of railroad engineers. In this case, the engineer who caused the accident had never not advised the contract doctor about his diabetes, his vision problems, or his prescription medications. Because the engineer died, the Safety Board cannot determine whether he failed to recognize or refused to admit to the potential risk in which he was placing himself and his passengers when he operated a train. The reasons for people not admitting to medical problems are as diverse as the individuals themselves. The Federal Aviation Administration (FAA), recognizing this, has enacted the following standard for the medical certification of pilots:

No person may act as pilot in command ... while he has a known medical deficiency, or increase of a known medical deficiency, that would make him unable to meet the requirements of his current medical certificate.²

The Safety Board believes that for the safety of the traveling public, it is just as necessary to compel railroad employees in safety-sensitive positions, especially engineers, to disclose any change in their physical status that might affect how they perform their job.

The National Transportation Safety Board therefore issues the following recommendations to the Federal Railroad Administration:

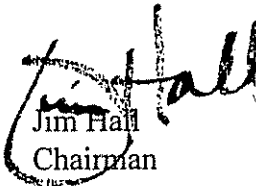
Revise the current color vision testing requirements for locomotive engineers to specify, based on expert guidance, the test to be used, testing procedures, scoring criteria, and qualification standards. (R-97-1)

Require as a condition of certification that no person may act as an engineer with a known medical deficiency, or increase of a known medical deficiency, that would make that person unable to meet medical certification requirements. (R-97-2)

Also, the Safety Board issued Safety Recommendations R-97-3 and -4 to the New Jersey Transit, R-97-5 to the Association of American Railroads, R-97-6 to the Brotherhood of Locomotive Engineers, R-97-7 to the United Transportation Union, and R-97-8 to the American Public Transit Association.

Please refer to Safety Recommendations R-97-1 and -2 in your reply. If you have any questions, you may call (202) 314-6439.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

By: 
Jim Hall
Chairman

² 14 CFR 61.53