

NOTICE OF SAFETY ADVISORY 98-01 - Vision standards of certified locomotive engineers in order to reduce the risk of accidents arising from vision impaired engineers.

On May 28, 1998, FRA published a Notice of Safety Advisory 98-01 in the Federal Register (Vol. 63, No. 102), addressing the vision standards of certified locomotive engineers in order to reduce the risk of accidents arising from vision impaired engineers. It reads as follows:

After a tragic 1987 accident and in response to the Rail Safety Improvement Act of 1988, FRA adopted rules establishing a program for qualifying locomotive engineers to assure the uniformity and adequacy of the qualifications standards. FRA's rule, which became effective in 1991, establishes requirements for testing the visual acuity of individuals who want to be certified as locomotive engineers. In the ongoing effort to monitor compliance with and the effectiveness of its existing regulatory program, FRA has been examining available data concerning administration of this aspect of the certification program. The data suggest that there is room for improving the rule's existing provisions concerning the testing and evaluation of visual acuity.

FRA also has received a number of recommendations for change to the rules concerning the qualification and certification of locomotive engineers. The most recent recommendation was received on May 14, 1998, when FRA was presented with a recommendation from the Railroad Safety Advisory Committee (RSAC) that FRA consider changes to the current provisions concerning the testing and evaluation of visual acuity.

RSAC was established to provide recommendations and advice to the Administrator on development of FRA's railroad safety regulatory program, including issuance of new regulations, review and revision of existing regulations, and identification of non-regulatory alternatives for improvement of railroad safety. RSAC recommendations carry considerable weight since RSAC is comprised of 48 representatives from 27 member organizations, including railroads, labor groups, equipment manufacturers, state government groups, public associations, and two associate non-voting representatives from Canada and Mexico.

The May 14 RSAC recommendation echoes an earlier recommendation from the National Transportation Safety Board (NTSB) based on the NTSB's March 25, 1997 report of its investigation into a fatal collision between two New Jersey transit commuter trains near Secaucus, New Jersey. See NTSB's 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).

Explanation of Current Requirements on Testing and Evaluation of Visual Acuity

FRA rules require each railroad to test the vision of every locomotive engineer when initially certified and at periodic intervals of no more than every three years. Each railroad's program must include criteria and procedures implementing how the railroad will ensure that each locomotive engineer will

have adequate distant visual acuity and the ability to recognize and distinguish between the colors of signals. The rule requires that a railroad have written confirmation from a licensed medical doctor that the person being certified meets the FRA visual acuity standards. See 49 C.F.R. Part 240 at §§ 240.121, 240.207.

The rule gives railroad's and railroad medical examiners considerable latitude when conducting visual acuity testing and evaluation. During the period the rule has been in effect, the latitude permitted has generated questions about a number of matters. These include questions about the use of chromatic lenses; accounting for the variations in railroad signals when a signal is displaying the color yellow; the duty of engineers who rely on contact lenses to have a pair of corrective eyeglasses available when on duty; the obligation of certified locomotive engineers to alert the railroad when the engineer has reason to believe that his or her vision has deteriorated to the extent that the person may no longer meet the acuity requirements; the duty of each medical examiner to have a clearly articulated basis for his or her decision that a person who lacks the specified level of acuity can nonetheless safely operate a locomotive; and the ability to use a variety of testing methods, including whether it is proper to conduct color vision tests by displaying yarn or other fabrics.

Of these questions, the most vexing involves the issue of employing appropriate testing of persons to detect color vision impairment. FRA's expectation was that the physicians who would be designated as railroad medical examiners would be trained to competently administer color vision examinations. Thus, FRA did not anticipate that it would be necessary to specify for the medical examiners the test procedures to be employed when testing for whether a person meets the standards specified in this rule. That assumption has been called into question under tragic circumstances. It appears that if the current rule had been implemented as FRA expected, the rule would have been adequate to prevent the NJT accident. For example, the NTSB report found that the medical history of the suspect engineer showed that he had been administered an acceptable test annually by the same NJT contract physician since at least 1985. For nine straight years, the engineer scored a perfect score on his color vision test. However, the NTSB report also found that beginning in 1994, the test results showed a deterioration of the engineer's ability to distinguish among some colors and, in February 1995, one year prior to the accident, the engineer's test scores caused him to be classified as having a moderate color vision handicap. As a consequence of this low test score, the physician said that he gave the engineer the Dvorine Nomenclature Test to further evaluate the engineer's color vision. NTSB reported that the testing protocol states that the nomenclature test is not a test of color discrimination ability, since many color blind individuals learn to name the colors correctly by their brightness instead of their hue. Reliance on this testing methodology suggests the physician failed to understand that the purpose of the Dvorine Nomenclature Test is to see whether the patient can identify the names of the colors--not to test color vision. In fact, the Dvorine Nomenclature Test is merely a preliminary step in conducting the Dvorine - Second edition color vision test and is often skipped because most patients are presumed to be able to identify the names of the colors. Thus, it is likely that this accident was preventable if the physician had responded differently to the pattern of deterioration and had used a sound approach to measuring the person's ability to distinguish colors.

RSAC'S RECOMMENDED CHANGES TO FRA'S RULES ON TESTING AND EVALUATION OF VISUAL ACUITY

FRA's goal is to prevent train collisions such as the one that occurred at Secaucus. Amending the existing regulation, so that railroad medical examiners are limited to the application of prescribed acceptable tests, will help achieve this goal. While the RSAC has recommended modification of the regulation, issuance of a final rule could take a substantial period of time during which it is possible that the circumstances surrounding the medical evaluation process of the Secaucus accident could be replicated. FRA has decided that the RSAC recommendations for change on this issue should be widely disseminated since these recommendations reflect the current best thinking of the regulated community. Broad sharing of information concerning the views of the advisory committee can be of assistance to medical examiners who are responsible for administering the existing regulation.

Based on past practice, FRA anticipates that the agency will accept the RSAC recommendation that FRA issue a notice of proposed rulemaking (NPRM) to revise the locomotive engineer certification regulation. The publication of this safety advisory should not be viewed as FRA endorsement of any particular aspect of the RSAC recommendations nor prejudging the eventual course of action which FRA may follow after carefully reviewing the RSAC recommendation. This safety advisory is intended to encourage all parties to carefully examine their current practices and, where appropriate, modify those practices to further reduce the risk of an accident or injury.

FRA anticipates that, when an NPRM may be issued, these and other RSAC recommendations addressing locomotive engineer certification will be the subject of public comment. These comments will be considered in the development of the final rule. As an example, even among members of the advisory committee who helped shape the consensus recommendations, FRA understands that some members would prefer to see that locomotive engineers be banned from wearing chromatic lenses during any color vision testing and any operation of a train or locomotive. This issue will be the subject of further discussion following completion of the public comment period.

Recommendation Details

RSAC recommended that:

- (a) FRA create an obligation for each certified locomotive engineer to notify his or her employing railroad's medical department or, if no such department exists, an appropriate railroad official, if the person's best correctable vision or hearing has deteriorated to the extent that the person no longer meets one or more of the prescribed vision or hearing standards or requirements of 49 C.F.R. part 240;
- (b) Each railroad should ensure that all of their medical examiners have a current copy of 49 C.F.R. part 240, including all appendices, and request that their medical examiners review the medical requirements;
- (c) Each railroad should remind all of their medical examiners who perform testing pursuant to 49 C.F.R. § 240.121 that the visual acuity tests should be conducted in accordance with the directions supplied by the manufacturer of the chosen test instruments and any American National Standards Institute (ANSI) standards that are applicable;

(d) Each railroad should ensure that all of their medical examiners know that no person shall be allowed to wear chromatic lenses during an initial test of the person's color vision; the initial test is one conducted in accordance with one of the accepted tests. Chromatic lenses may be worn in accordance with any subsequent testing if permitted by the medical examiner and the railroad;

(e) Each railroad should ensure that all of their medical examiners know that railroad signals do not always occur in the same sequence and that testing procedures must take that fact into account;

(f) Each railroad should ensure that all of their medical examiners know that "yellow signals" do not always appear to be the same;

(g) Each railroad should ensure that all of their medical examiners know that it is not acceptable to use "yarn" or other materials to conduct a simple test to determine whether the certification candidate has the requisite vision;

(h) Each railroad should require that its medical examiners retest and further evaluate any locomotive engineer who reports a deteriorating vision condition or, upon request, an examinee who fails to meet the rule's articulated vision standards. The railroad's medical examiner will be expected to review all pertinent information and, under some circumstances, must condition certification on any special restrictions the medical examiner determines in writing to be necessary, e.g., restrict an examinee who does not meet the criteria from operating a locomotive or train at night, during adverse weather conditions, or outside of a yard. This decision should not be made until after consultation with one of the railroad's designated supervisors of locomotive engineers;

(i) Each railroad should ensure that all of their medical examiners know that engineers who wear contact lenses should have good tolerance to the lenses and should be instructed to have a pair of corrective glasses available when on duty; and

(j) Each railroad should ensure that when a person is tested pursuant to 49 C.F.R. § 240.121, the person has the ability to recognize and distinguish between the colors of railroad signals as demonstrated by successfully completing one of the tests specified in the table below. Each railroad should clearly explain to the medical examiners conducting such tests that the key is being able to distinguish among railroad signals; without such a clarification, medical examiners unfamiliar with the railroad environment might focus their attention on colors that do not appear as railroad signals.

(k) Each railroad should ensure that medical examiners conducting tests to determine visual acuity adhere to the following guidance when administering the vision acuity requirements of 49 C.F.R. §§ 240.121 and 240.207. Select a testing methodology only from the following testing protocols which are deemed acceptable testing methods for determining whether a person has the ability to recognize and distinguish among the colors used as signals in the railroad industry. The acceptable test methods are shown in the left hand column and the criteria that should be employed to determine whether a person has failed the particular testing protocol are shown in the right hand column. Successful completion of one of these tests should be required, but requiring successful completion of multiple tests is discouraged since it would most likely be redundant.

ACCEPTED TESTS	FAILURE CRITERIA
PSEUDOISOCROMATIC PLATE TESTS	
American Optical Company 1965 AOC - Hardy-Rand-Ritter plates - second edition Dvorine - Second edition Ishihara (14 plate) Ishihara (16 plate) Ishihara (24 plate) Ishihara (38 plate) Richmond Plates 1983	5 or more errors on plates 1-15 Any error on plates 1-6 (plates 1-4 are for demonstration - test plate 1 is actually plate 5 in book) 3 or more errors on plates 1-15 2 or more errors on plates 1-11 2 or more errors on plates 1-8 3 or more errors on plates 1-15 4 or more errors on plates 1-21 5 or more errors on plates 1-15
MULTIFUNCTION VISION TESTER	
Keystone Orthoscope OPTEC 2000 Titmus Vision Tester Titmus II Vision Tester	Any error Any error Any error Any error

Issued in Washington, D.C. by Donald M. Itzkoff, Deputy Administrator.

#