

See 45 FR 21109 (March 31, 1980). Part 229 was added in order to modernize the federal regulations previously contained in part 230 related to all types of locomotives by separating and amending the requirements related to diesel and electric locomotives from those related to steam locomotives. The provisions contained in § 229.125(a)–(c) were intended to be a modified and condensed version of the requirements previously contained in § 230.231 prior to 1980. See 44 FR 29618 (May 21, 1979).

In the 1979 Notice of Proposed Rulemaking (NPRM) and the 1980 final rule, FRA explained that the approach contained in § 230.231 for determining intensity was imprecise and unscientific. Section 230.231 used a vague performance standard to describe the intensity which read as follows:

A headlight which shall afford sufficient illumination to enable a person in the cab of such locomotive who possesses the usual visual capacity required of locomotive enginemen, to see in a clear atmosphere, a dark object as large as a man of average size standing erect at a distance of at least 800 feet ahead and in front of such headlight. \* \* \*

See § 230.231 in pre-1980 CFR. In order to make this vague performance standard more precise and scientific, FRA specified that a locomotive headlight must produce a luminous intensity of at least 200,000 candela. See 44 FR 29618 and 45 FR 21109. In the preamble to the final rule, FRA stated that the more scientific 200,000-candela standard could be met by the headlights used in the existing locomotive fleet and that the use of the more modern standard should not be viewed as a change in FRA's enforcement approach. *Id.* At the time the final rule was issued, virtually all locomotive headlights were equipped with the 200-watt lamps which are capable of producing in excess of 200,000 candela. Thus, FRA was merely attempting to describe, in scientific terms, the type of lamps being used by the industry in locomotive headlight fixtures at that time.

Subsequent to the issuance of the final rule, FRA developed informal enforcement guidance for its field inspectors related to when a locomotive's headlight should be considered inoperative. The guidance was eventually included in FRA's Motive Power and Equipment (MP&E) Enforcement Manual distributed in July of 1992. See MP&E Enforcement Manual at 8–79. This guidance instructed FRA inspectors to consider a locomotive's headlight to be operative when the

locomotive is equipped with a sealed two-beam (two-lamp) headlight fixture and only one of the lamps is illuminated. The rationale for this guidance was based on the fact that virtually all locomotives were equipped with a dual-lamp headlight fixture and prior to the early 1990s the lamps used in these fixtures were the 200-watt lamps, each independently capable of producing at least 200,000 candela. Because the regulation only requires the headlight to produce 200,000 candela, FRA determined that it would not consider a dual-lamp headlight inoperative if it is equipped with at least one operative lamp capable of producing 200,000 candela. *Id.*

As noted above, in the early to mid-1990s, the industry began widespread use of the 350-watt lamps in both headlight and auxiliary light fixtures. Due to normal variations in production processes, the vast majority of 350-watt lamps produced since 1994 do not produce 200,000 candela. The current production of the 350-watt lamps is centered at approximately 160,000 candela. Furthermore, data provided to FRA do not definitively establish that an individual 350-watt lamp meets the underlying performance standard, discussed above, on which the 200,000-candela requirement was based. Moreover, FRA is not comfortable applying an old and somewhat subjective performance standard in place of the more precise and scientific standard that was adopted several decades ago. Therefore, because most 350-watt lamps do not individually produce the luminous intensity specified in the existing regulation, FRA believes it is necessary to clarify its existing enforcement guidance and specifically modify the regulation to reflect its position regarding the use of 350-watt lamps in locomotive headlight fixtures.

Consistent with FRA's existing enforcement guidance related to the headlight provisions contained in § 229.125(a), FRA will continue to interpret the term "headlight," as used in this provision, to mean the entire headlight fixture whether it is comprised of either one or more lamps. Thus, the requirement contained in this provision to produce 200,000 candela is to be determined by the luminous intensity of the entire headlight fixture. Although a single 350-watt lamp, as described above, generally does not produce 200,000 candela, data clearly establish that the beams of two 350-watt lamps in a dual-lamp headlight easily produce well in excess of 200,000 candela once the two beams overlap

sufficiently, which occurs within a few feet in front of the fixture.

In light of the above, FRA will consider a locomotive with a dual-lamp headlight fixture that is equipped with two PAR-56, 350-watt, 75-volt lamps to meet the 200,000-candela requirement contained in § 229.125(a), provided both lamps are operative. If either lamp in such a configuration becomes inoperative, the locomotive is to be handled in accordance with the movement-for-repair provisions contained in § 229.9. Similarly, FRA will continue to consider a headlight fixture equipped with a single operative PAR-56, 200-watt, 30-volt lamp to meet the candela requirements of § 229.125(a) as such lamps are capable of individually producing 200,000 candela. FRA is amending the regulatory language contained in § 229.125(a) to specifically include the interpretation and clarification discussed above. It should be noted that FRA expects railroads to have some method or procedure in place which notifies the operating crew and mechanical employees of the type of lamps being utilized in the locomotive headlight fixture in order that the locomotive can be properly handled for repairs, if necessary.

#### *B. Auxiliary Lights: § 229.125(d)(2)*

The regulatory provisions related to locomotive auxiliary lights are found at § 229.125(d) through (h) and § 229.133. These requirements were added to the regulations between 1993 and 1996 and were established through a rulemaking that began with a 1993 interim final rule, containing interim provision related to auxiliary lights, and then proceeded to a 1995 NPRM proposing many of the auxiliary light provisions that were ultimately issued in the 1996 final rule. See 58 FR 6899 (February 3, 1993), 60 FR 44457 (August 28, 1995), and 61 FR 8881 (March 6, 1996). At this time, the provisions relating to auxiliary lights contained in § 229.133 are for the most part superseded by similar provisions contained at § 229.125, except to the extent that certain types of auxiliary lights were "super-grandfathered" as meeting the requirements of § 229.125. See 61 FR 8885–86 and § 229.133(c). Although these documents require that each prescribed auxiliary light produce 200,000 candela, none of them directly discusses FRA's rationale for including the specified luminous intensity. It can be assumed that the 200,000-candela requirement was based on the headlight provision discussed above. Moreover, at the time the auxiliary light provisions were added to the regulations, both the