

(xii) Design warnings to match the level of risk or danger with the alerting nature of the signal;

(xiii) With respect to information entry, avoid full QWERTY keyboards for data entry; and

(xiv) Use digital communications for safety-critical messages between the locomotive engineer and the dispatcher.

(e) *What kinds of HMI design elements must a designer consider with respect to problem management?* (1) HMI design must enhance an operator's situation awareness. An operator must have access to:

(i) Knowledge of the operator's train location relative to relevant entities;

(ii) Knowledge of the type and importance of relevant entities;

(iii) Understanding of the evolution of the situation over time;

(iv) Knowledge of the roles and responsibilities of relevant entities; and

(v) Knowledge of expected actions of relevant entities.

(2) HMI design must support response selection and scheduling.

(3) HMI design must support contingency planning.

[70 FR 11107, Mar. 7, 2005]

## PART 238—PASSENGER EQUIPMENT SAFETY STANDARDS

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FIGURE 1 TO SUBPART E—POWER CAR CAB FORWARD END STRUCTURE CONCEPTUAL IMPLEMENTATION

FIGURE 2 TO SUBPART E—POWER CAR CAB REAR END STRUCTURE CONCEPTUAL IMPLEMENTATION

FIGURE 3 TO SUBPART E—TRAILER CAR END STRUCTURE CONCEPTUAL IMPLEMENTATION

FIGURE 4 TO SUBPART E—TRAILER CAR INBOARD VESTIBULE END STRUCTURE CONCEPTUAL IMPLEMENTATION

#### **Subpart F—Inspection, Testing, and Maintenance Requirements for Tier II Passenger Equipment**

- 238.501 Scope.
- 238.503 Inspection, testing, and maintenance requirements.
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- APPENDIX A TO PART 238—SCHEDULE OF CIVIL PENALTIES
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- APPENDIX E TO PART 238—GENERAL PRINCIPLES OF RELIABILITY-BASED MAINTENANCE PROGRAMS

AUTHORITY: 49 U.S.C. 20103, 20107, 20133, 20141, 20302-20303, 20306, 20701-20702, 21301-21302, 21304; 28 U.S.C. 2461, note; and 49 CFR 1.49.

SOURCE: 64 FR 25660, May 12, 1999, unless otherwise noted.

### **Subpart A—General**

#### **§ 238.1 Purpose and scope.**

(a) The purpose of this part is to prevent collisions, derailments, and other occurrences involving railroad passenger equipment that cause injury or death to railroad employees, railroad passengers, or the general public; and to mitigate the consequences of such occurrences to the extent they cannot be prevented.

(b) This part prescribes minimum Federal safety standards for railroad passenger equipment. This part does not restrict a railroad from adopting and enforcing additional or more stringent requirements not inconsistent with this part.

(c) Railroads to which this part applies shall be responsible for compliance with all of the requirements contained in §§ 238.15, 238.17, 238.19, 238.107, 238.109, and subpart D of this part effective January 1, 2002.

(1) A railroad may request earlier application of the requirements contained in §§ 238.15, 238.17, 238.19, 238.107, 238.109, and subpart D upon written notification to FRA's Associate Administrator for Safety. Such a request shall indicate the railroad's readiness and ability to comply with all of the provisions referenced in paragraph (c) introductory text of this section.

(2) Except for paragraphs (b) and (c) of § 238.309, a railroad may specifically request earlier application of the maintenance and testing provisions contained in §§ 238.309 and 238.311 simultaneously. In order to request earlier application of these two sections, the railroad shall indicate its readiness and ability to comply with all of the provisions contained in both of those sections.

(3) Paragraphs (b) and (c) of § 238.309 apply beginning September 9, 1999.

[64 FR 25660, May 12, 1999, as amended at 65 FR 41305, July 3, 2000; 67 FR 19989, Apr. 23, 2002]

#### **§ 238.3 Applicability.**

(a) Except as provided in paragraph (c) of this section, this part applies to all:

(1) Railroads that operate intercity or commuter passenger train service on standard gage track which is part of