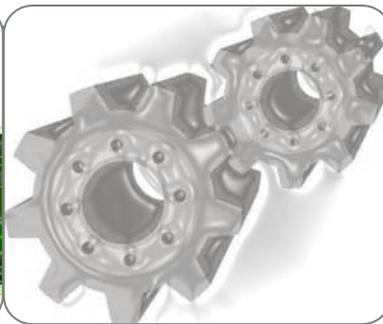
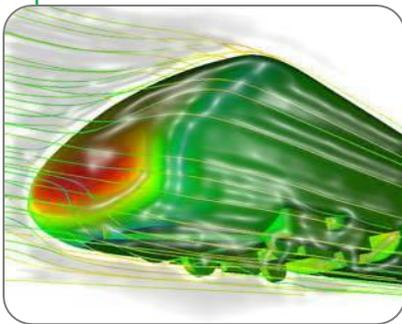


Engineering Task Force Update

to the

53rd Railroad Safety Advisory Committee Meeting

May 28, 2015
Washington, DC



FRA – Office of Railroad Safety

6/1/2015



U.S. Department
of Transportation
**Federal Railroad
Administration**

Outline



Task Force Introduction and Background

- ✓ Tier III Safety Appliances
- ✓ Incorporate 49 CFR Part 229 for Tier III
- P Alternative crashworthiness for single car/locomotive
- IP Tier III Safe Operation Plan (Subpart J)
- IP Tier III Inspection, Testing & Maintenance
- P Update 49 CFR 238.111 and other 238 misc. requirements
- NS Tier I passenger trainset/locomotive safety appliances

Status of Current Tasks

Objective	Result
Present remaining proposals for application of 49 CFR Part 229 to Tier III - seek ETF concurrence	complete
Present Tier III safety appliance - attachment strength proposal and seek ETF concurrence	complete
Resolve open issues related to "single car/locomotive" alternative crashworthiness	technical committee formed
Receive feedback on Tier III Safe Operation Plan Proposal and determine path forward	Need to further reconcile with SSP Rule
Present concept for Tier III ITM to gain initial feedback	complete

Updates from March 2015 meeting

ETF Background

Engineering Task Force Established by
Passenger Safety Working Group in **2009**

Original Task:

Develop alternative crashworthiness criteria
and waiver guidance - published 10/28/2011

Current Task:

Provide recommendations for revised
equipment regulations – under development

DRAFT
DRAFT RSAC REPORT - 9-16-10



US Department
of Transportation
Federal Railroad
Administration

**Technical Criteria and Procedures for Evaluating
the Crashworthiness and Occupant Protection
Performance of Alternately-Designed Passenger
Rail Equipment for Use in Tier I Service**

Office of Research and
Development
Washington, DC 20005



DOT/FRA/ORD-xxxx

Final Report
Xxxx, 2010

This document is available to the public
through the National Technical Information
Service, Springfield, Virginia 22161
This document is also available on the
FRA web site at www.fra.dot.gov

ETF Passenger Equipment Regulatory Plan

NPRM 1: *(Under Review)*

Tier I alternative crashworthiness

Tier III crashworthiness standards

Align Tier II MAS with new VTI rule
(160mph)

Codify Tier III Glazing and NPRM 1
consensus items

Tier III Braking Systems

NPRM 2: *(In Development)*

Tier III Safety Appliances

Incorporate 49 CFR Part 229 for Tier III

Alternative crashworthiness for single
car/locomotive

Tier III Inspection, Testing and Maintenance

Update Testing/Commissioning
Requirements

Tier I passenger trainset/locomotive safety
appliances



Progress of NPRM 2 Topics (to date...)

IP Tier III Safety Appliances

✓ - substantially complete
IP - In Progress
P - Pending
NS - Not started

✓ Incorporate 49 CFR Part 229 for Tier III

P Alternative crashworthiness for single car/locomotive

IP Tier III Safe Operation Plan (Subpart J)

IP Tier III Inspection, Testing & Maintenance

P Update 49 CFR 238.111 requirements

NS Tier I passenger trainset/locomotive safety appliances



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6/1/2015

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Objectives from March Meetings

Objective	Result
Present remaining proposals for application of 49 CFR Part 229 to Tier III - seek ETF concurrence	complete
Present Tier III safety appliance - attachment strength proposal and seek ETF concurrence	complete
Resolve open issues related to “single car/locomotive” alternative crashworthiness	technical committee formed
Receive feedback on Tier III Safe Operation Plan Proposal and determine path forward	Need to further reconcile with SSP Rule
Present concept for Tier III ITM to gain initial feedback	complete

Tier III Safety Appliances

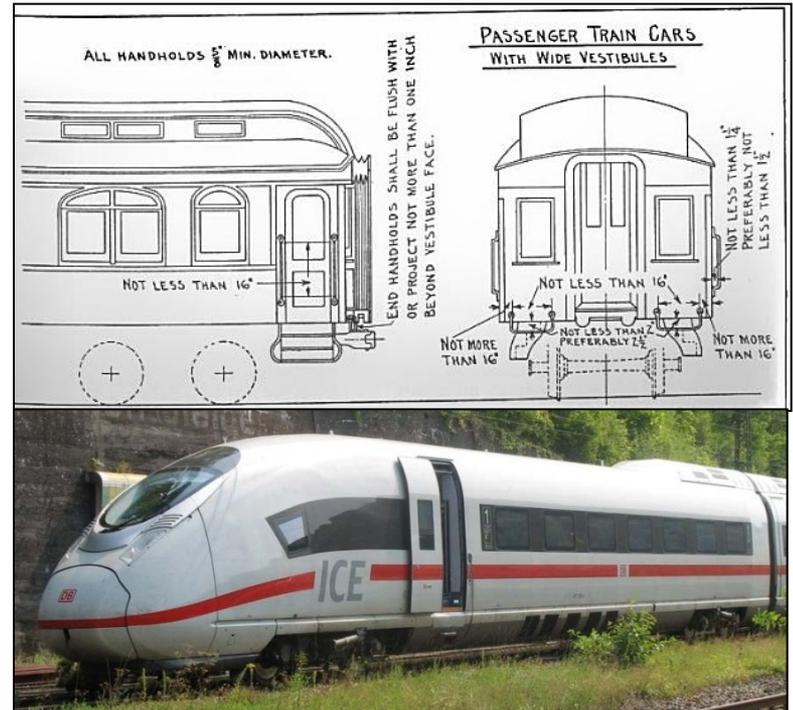
Task Status

A working committee was created to develop recommendations to ETF
3 of 4 topics have been resolved, to date.

The committee has divided the task into 4 major areas:

1. Application (Proposal 1) ✓
2. Location & Size ←
3. Appliance Strength ✓
4. Attachment Strength ✓

Fall 2015



Tier III Safety Appliances

Proposal 2 (Application and Attachment Strength)

Objectives:

1. Maintain the **intent** of the original requirements;
2. Establish whether original methodology was appropriate; and to
3. Determine how best to preserve intent for modern applications.

Recommendations were presented and approved by ETF on March 18, 2015

ETF-046-03 -- Tier III Safety Appliances - Design and Attachment Strength PROPOSAL_03-4-2015.docx

[The following presents conceptual language to address the safe design and attachment of safety appliances on Tier III trainsets.]

(b) General.

- (1) All safety appliances shall be securely connected to the vehicle and meet the strength, rigidity and durability requirements defined in this part.
- (2) Safety appliances shall be designed to carry loads in the downward (gravity) direction and in a direction perpendicular to the side or end of the car as follows:
 - (i) Handholds shall be designed to support a load at any point on the useable length of 350 lb in any direction.
 - (ii) Steps shall be designed to support individually applied loads at any point on the useable length of 450 lb in the downward direction and 350 lb in the horizontal direction (inward or outward)
 - (iii) For purposes of evaluation, the load may be distributed over a distance of not more than 3 inches along the usable length of the safety appliance.
 - (iv) Stresses in the safety appliance and the car structure to which it is attached shall be less than the specified minimum yield strength for each component for the load values given in (b)(2)(i) and (ii).
 - (v) Fillet welds and fasteners shall be designed to have an ultimate strength with a factor of safety of at least two with respect to the load values give in (b)(2)(i) and (ii).
 - (vi) The safety appliance, the connection to the car, and the car structure to which it is attached shall be designed for infinite fatigue life using the loads in (b)(2)(i) and (ii).
 - (vii) Handholds shall be rigidly attached to the carbody structure such that the maximum elastic deflection at the midpoint of a supported span under the applied load defined in (b)(2)(i) and (ii) shall be less than $L/120$, where L is the length of the supported span measured in inches.
- (3) Welded safety appliances and connections, when used shall be:
 - (i) Designed and fabricated in accordance with the welding process and the quality control procedures contained in the applicable current American Welding Society (AWS) Standard, the Canadian Welding Bureau (CWB) Standard or an equivalent nationally or internationally recognized welding standard;
 - (ii) Welded by an individual certified under the applicable current AWS Standard or an equivalent nationally or internationally recognized welding qualification standard;

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Tier III 229/ITM Task Group Update

Analysis of Part 229 application complete
– draft language being developed.

Discussions have started on Tier III ITM requirements

229/ITM TG Tasks:

1. Determine appropriate application of Part 229 to Tier III ✓ ← complete
2. Develop requirements for Tier III Inspection, Testing and Maintenance (ITM)

§229 Reference	Topic	Adopted for Tier III?	New §238	Status
<u>Electrical System</u>				
§229.77	Current collectors.	modified	238.7E1	closed
§229.79	Third rail shoes.	superseded	238.7E1	closed
§229.81	Emergency pole; shoe insulation.	superseded	238.7E1	closed
§229.83	Insulation or grounding of metal parts.	yes	238.7E2	closed
§229.85	High voltage markings: doors, cover plates, or barriers.	modified	238.7E3	closed
§229.87	Hand-operated switches.	modified	238.7E4	closed
§229.89	Jumpers; cable connections.	modified	238.7E5	closed
§229.91	Motors and generators.	superseded	238.7E6	closed
<u>Internal Combustion Equipment</u>				
§229.93	Safety-cut-off device.	no		open
§229.95	Venting.	no	-	closed
§229.97	Grounding fuel tanks.	no	-	closed
§229.99	Safety hangers.	no	-	closed
§229.101	Engines.	no	-	closed
<u>Steam Generators</u>				
§229.103	Safe working pressure; factor of safety.	no		open
§229.105	Steam-generator number.	no	-	closed
§229.107	Pressure gauge.	no	-	closed
§229.109	Safety valves.	no	-	closed

Example of 229-Tier III Cross-reference Table.

Future Meetings

Upcoming Working Sessions:

- ITM/229 Task Group – May 14; June TBD; July TBD, 2015
- Tier III Safety Appliances – July 27, 2015
- Single Car/Locomotive Alt. Crashworthiness – dates: TBD

**Next full Task Force meeting scheduled for:
Oct./Nov. 2015**

Questions?



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6/1/2015



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