

# Association of American Railroads (AAR)

## Passenger Equipment Performance Specification

Status Update

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FRA



The NGEC will provide national leadership in standardization, acquisition, financing and management of passenger rail equipment.

# Purpose

Develop an AAR Standard approach to address areas of concern including:

- insuring operational safety,
- reducing risks, and
- improving operational efficiency

regarding the introduction and operation of new-design passenger equipment (both passenger cars and passenger locomotives) on freight railroad track, particularly at typical freight railroad speeds (including low speeds).



# Rationale

A new standard(s) would be beneficial for consistency for Class I Railroad Operations:

- Safety (derailment prevention)
- New equipment waybill moves on revenue freight trains
- New equipment operated by passenger operators on freight lines
  
- Mitigating network delays and interference with freight ops
- Growth in passenger operations on Class I Railroads
  
- **Adapting existing standards and requirements to the extent possible**



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# AAR's Primary Motivation

- Vehicle/track interaction
  - vehicle dynamics
  - derailment potential
- Loss of shunt
- New equipment with unconventional design features:
  - crash energy management
  - push-back couplers (which may not have alignment control)
  - brake systems (including handbrakes)
  - PTC systems



# Organization

- AAR created Technical Advisory Group (TAG) to develop specification
- Participants include:

Caltrans

Amtrak

Siemens

IDOT

CSXT

LTK

FRA

UPRR

CH2M

APTA

NS

Volpe

TTCI



# Major Activities

- June 4, 2015: Kick-off meeting in DC (AAR, Class Is, FRA, Amtrak, JPEs)
- May 27, 2016: TAG web conference
- January 24, 2017: TAG face-to-face meeting in DC
- Periodic conference calls/webcasts



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# Organization of the Specification (1)

## EXISTING DRAFT

1. Introduction
2. Existing FRA, PRIIA and APTA Standards (FTA-AAR compendium of tests performed on passenger vehicles: [www.fta.aar.com](http://www.fta.aar.com))
3. Procedures for Acquiring Route-Specific Track Geometry Data for Design and Evaluation of Passenger Equipment for New Service
4. Roles in Corridor Testing on Class I Railroads



# Organization of the Specification (2)

## PLANNED/IN-PROCESS

5. Loss of Shunt Requirements for New Regularly Scheduled Passenger Service
6. Interoperability Requirements – Passenger Equipment on Class I Railroads
7. Interoperability Requirements – Operation of Regularly Scheduled Revenue Passenger Service
8. Vehicle/Track Interaction Requirements

Appendix A: AAR Application Procedures





# Status (1)

- Draft of Sections 1-4 distributed to AAR membership July 15, 2016
- No comments received
- TAG reconvened January 24, 2017
  - Review Draft M-1006, Chapters 1-4
  - Discuss proposed content of Chapters 5-8
- Updated draft of Chapters 1-4 re-issued for 30-day TAG comment period on January 31, 2017



# Status (2)

- Chapter 5: LOS – TTCI seeking AAR research funding to explore further – subgroup to be formed to review proposal when complete
- Chapters 6, 7: Focus on compatibility of new passenger equipment with freight ROW/equipment
  - Movement of equipment
  - New regularly-scheduled service



# Status (3)

## Chapter 8: VTI

- Identifies testing and/or simulations required to demonstrate safe performance on FRA track classes 1 – 5 (up to 90 mph)
  - Any vehicle intended for passenger service
    - In-Transit on freight RR from one location to another
    - Revenue Service operation on a freight RR
  - Identify limiting VTI performance envelope
    - allow unrestricted movement on Freight RRs
    - identify conditions that limit performance and could restrict movements
  - Operation on Track Classes 6 and up covered by FRA 213 Subpart G Track Standards (90 mph and faster)
  - References existing passenger standards where ever possible



# Vehicle/Track System Qualification – Rule effective July 11, 2013

**New Vehicle Type**

Cant Deficiency (in)	Maximum Allowable Operating Speed (mph)									
	15 10'	30 25'	60 40'	80 60'	90 80'	110	125	160	220	
	Track Class									
	1	2	3	4	5	6	7	8	9	
traditional track geometry limits for $E_u \leq 5$						<b>No Testing or Simulations</b>				
			●			●●●●		●●●●		
high-CD track geometry limits for $E_u > 5$			●●			●●●●		●●●●		
			●●●							

**Qualified Vehicle Type**

Cant Deficiency (in)	Maximum Allowable Operating Speed (mph)									
	15 10'	30 25'	60 40'	80 60'	90 80'	110	125	160	220	
	Track Class									
	1	2	3	4	5	6	7	8	9	
traditional track geometry limits for $E_u \leq 5$						<b>No Testing or Simulations</b>				
			●					●●	●●	
high-CD track geometry limits for $E_u > 5$			●●					●●●●		
			●●●							

- Lean Test (may be met by static or dynamic testing, see sections 213.57(d) & 213.329(d))
- Carbody Accelerometers
- Wheel-Rail Force Measurement **OR** Simulation (MCAT & Segment)
- Wheel-Rail Force Measurement **AND** Simulation (MCAT & Segment)
- Truck Accelerometers
- FRA Notification (see sections 213.57(h) & 213.329(h))

# Status (4) VTI Subgroup

- Standard Development Steps to date (January 2017)
  - Reviewed existing FTA, FRA, AAR, APTA, etc. standards
  - Reviewed derailment NTSB, TSB and FRA data bases
  - TTCI participation in APTA PRESS Curving Safety Performance Development
  - TTCI and Volpe Center meetings to identify and discuss proposed contents of standard
  - AAR/TTCI draft of Section 8.0 VTI test and/or simulation analysis requirements for Class 1-5 tracks up to 90 mph
    - Reference other standards where possible
    - Where possible used information from past derailment history
    - Included other common/likely operational conditions
    - Draw on experience in derailment investigation, and vehicle performance analysis & testing of freight and passenger vehicles for acceptance



# Next Steps

- Collect comments on second draft (Ch 1-4)
- Revise Ch 6, 7 based on input from January 24, 2017 meeting
- TTCI and Volpe to work on revised draft of Chapter 8
- Next TAG meeting: TBD



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# Questions?



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